THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

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PUBLISHED BY
THE GULF PUBLISHING COMPANY
HOUSTON, TEXAS
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Staff correspondents at all important points.

Member Audit Bureau of Circulation
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PITTSBURGH.....Vandergrift Bldg.
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The Oil Man's Calendar

APR. 24–29	Oil-World Exposition, Houston, Texas.
MAY 2– 5	Petroleum Electric Supply Association, Houston, Texas.
2– 5	Petroleum Industry Electrical Association, Houston, Texas.
3– 5	Natural Gasoline Association of America, Tulsa, Oklahoma.
4– 5	Oilbelt Safety Conference, Abilene, Texas.
8–11	American Gas Association, Natural Gas Division, Tulsa, Oklahoma.
9–11	American Institute of Chemical Engineers, Arkon, Ohio.
15–18	American Petroleum Institute, Mid-Year Meeting, New Orleans, Louisiana.
18–20	National Oil Scouts Association, Houston, Texas.
21–25	National Association of Purchasing Agents, San Francisco.
JUNE 3	Illinois-Indiana Petroleum Association, Robinson, Illinois.
15–16	Pennsylvania Grade Crude Oil Association, Hershey, Pa.
JULY 10–17	American Institute of Mining and Metallurgical Engineers, Regional Meeting, San Francisco, Calif.
AUG. 1– 6	The Eastern United States Michigan Oil & Gas Exposition, Mt. Pleasant, Michigan.

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Published every Monday. Single Copies 15 cents (Special Issues 50c). Subscription price: domestic and foreign, $2.00 a year; 2 years $3.00. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879. Subscription restricted to those engaged in the producing and pipe line branches of the oil industry or the manufacturing and distribution of oil field supplies. Advertising rates on application.

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This Week's Panorama

SOMETIMES it is not easy to diagnose the complicated troubles that the oil industry encounters. But only a short memory is required to analyze the lately developed unfavorable situation, in which crude oil production and refinery runs are excessive, while the markets are becoming unsettled again after a brief demonstration of firmness.

Troubles from Texas

The present difficulties obviously date from the latter part of March, when the Texas Railroad Commission began juggling allowables and started the state on a course of overproduction.

The industry previously was struggling along with the burdens of overproduction in Illinois, Michigan, and California. But the ill effects of those excesses were being restricted fairly well within those states, as the Mid-Continent and other states were holding their production within market demand.

April Allowables Too High

When prolific and dominant Texas began substantially overproducing, under its frequently changed April allowables, however, the overproduction problem was seriously complicated.

There occurred not only a material increase of surplus crude oil in the markets but also an overshadowing of the industry with clouds of uncertainty and misgivings.

When Texas began overproducing, the state invited overproduction also in other states of the Mid-Continent. The harmony and cooperation among Mid-Continent states, that had been laboriously built up over a period of years, with the aid of the Interstate Oil Compact, were undermined to some extent.

Texas Materially Overproducing

At its March 15 statewide proration hearing, the Texas Railroad Commission was advised by all witnesses to hold the state allowable within market demand. But the commission disregarded all the testimony and evidence, lifted Saturday shutdowns, and ordered and reordered allowables that have led to important overproduction.

In the week ended April 15, Texas production was 22,450 barrels a day in excess of market demand for Texas oil as estimated by the Bureau of Mines.

In the week ended April 22, the Texas output was 41,450 barrels a day greater than the indicated market demand.

In each of those two weeks the surplus production in Texas represented a substantial proportion of the excess for the United States as a whole.

United States production in the week ended April 15 was 60,500 barrels a day greater than the indicated market demand for domestic crude, and in the week ended April 22 the national excess was 92,700 barrels daily, as the crude oil production jumped to a new peak for the year.

New Texas Allowables

In announcing its order of last week setting allowables for May and June, the Texas Railroad Commission gave assurance that during those coming months Texas production would be restricted within market demand as estimated by the Bureau of Mines.

However, similar assurance was given in connection with April allowables, and actual production failed to stay within demand, as many allowables were revised.

The record for April makes it appear highly uncertain how large Texas production actually will be in May and June.

The commission's order of April 26 provided for shutdowns of Texas fields on each Sunday and on each of the first two Saturdays in both May and June. The commission said that the state's net allowable on May 1 would be 13,023 barrels a day less than market demand as estimated by the Bureau of Mines. (The allowable increases as new wells are completed.)

Market Improvement Interrupted

The important overproduction of crude oil since April 1 undoubtedly has been largely responsible for the excessive refinery runs and contra-seasonal additions to gasoline that have occurred lately.

All these excesses, in turn, doubtless have been important causes for the interruption last week of an incipient recovery of the markets.

Whereas the markets for both crude and refined oils had been improving for several weeks previously, they became unsettled last week, and only secondary revisions of prices were made. In the primary markets, tank car prices of gasoline were unchanged, following the improvement of ⅛ to ¼ cent a gallon in the several preceding weeks.

The market for natural gasoline in the Mid-Continent was not as strong as in the previous week, and some of the lighter fuel oils were further marked down.

Texas Proration Law Extended

The law upon which oil proration in Texas is based has been extended for two years and will not expire until September 1, 1941. Following final passage in the house and the senate of the Texas

legislature, it was anticipated last week that the governor would sign the measure, as he had commended the state's oil policy.

Connally Act May Be Only Extended

Inasmuch as the Texas legislature only extended the state oil conservation law, instead of making it permanent, it was indicated that the House of Representatives at Washington probably would agree only to a two-year extension of the Connally Act, although the Senate had approved a bill to make the hot oil law permanent. For in actual practice, the Connally Act is primarily an aid in the enforcement of the Texas oil laws. It will expire June 30 unless extended.

Gasoline Picture Marred by Surplus Stocks

ALTHOUGH refinery runs were curtailed materially in the week ended April 22, they had been alarmingly high in the preceding week, and the curtailment was not sufficient to prevent further impairment of the gasoline situation.

Gasoline production continued to exceed market requirements, and about 700,000 barrels went into storage, the inventories in the United States having increased to 87,769,000 barrels as of April 22, a new peak for the year.

In the previous week, over 500,000 barrels of gasoline had been forced into storage, when refinery runs shot up to a 1939 peak of 3,330,000 barrels daily.

April Rise Not Normal

Whereas the gasoline stocks were increased in the two consecutive weeks, ended April 15 and April 22, they normally decline throughout April, with consumption running seasonally high.

This year, steady withdrawals of gasoline from storage in April would have been particularly desirable, as the industry entered the spring-summer season on March 31 with stocks around 87,000,000 barrels or about 7,000,000 barrels higher than economically justified.

Instead of improving the gasoline situation after April 1, however, the industry has impaired it, by running excessive quantities of crude oil through the refineries.

Surplus Crude Boosts Runs

The excessive refinery runs in April undoubtedly have been due in considerable part to the excessive production of crude oil. Crude oil output has been greater than market demand as estimated by the Bureau of Mines, and the surplus crude has tended to expand refinery runs beyond normal proportions.

United States crude oil production rose to a new peak for the year in the week ended April 22, having averaged 3,526,700 barrels daily, which was 32,200 barrels a day more than the output in the previous week and 92,700 barrels a day more than market demand, as estimated for April by the Bureau of Mines.

Crude runs to refinery stills averaged 3,280,000 barrels daily in the week ended April 22. That was 50,000 barrels a day less than the 1939 peak runs of 3,330,000 barrels daily in the week ended April 15.

Gasoline production totaled 9,785,000 barrels in the week ended April 22, having been greater than the output of 9,760,000 barrels in the previous week by 25,000 barrels or about 3000 barrels daily.

Gasoline Added to Storage

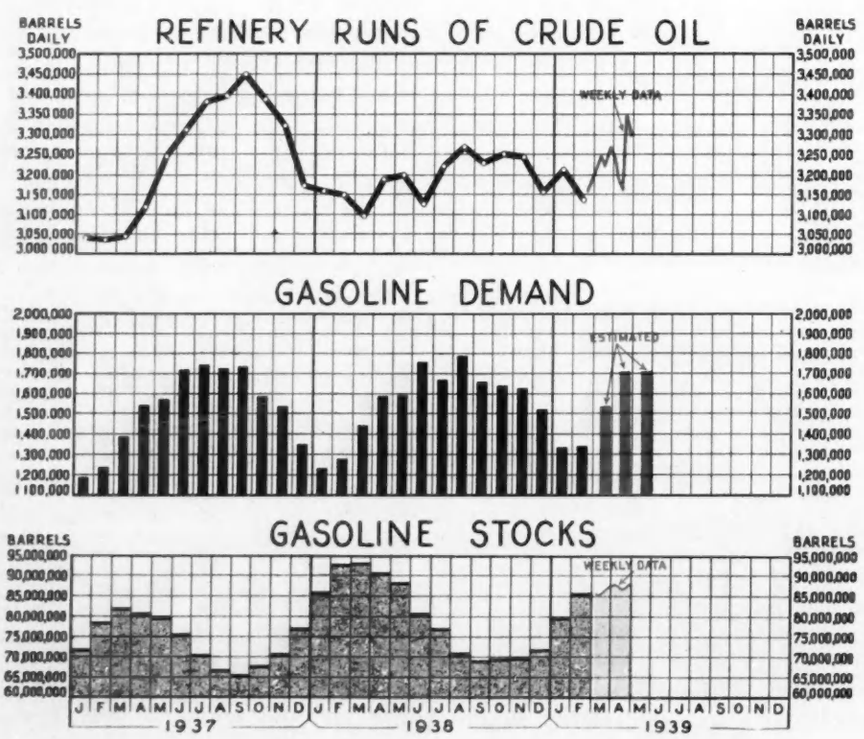
The markets did not absorb this gasoline production, and much lower refinery runs and gasoline output would have been necessary for preventing the running of gasoline into storage.

The stocks of finished and unfinishd gasoline in the United States were increased 698,000 barrels in the week ended April 22, to a new 1939 peak of 87,769,000 barrels, the additions having been at an average rate of nearly 100,000 barrels daily.

The gasoline stocks now are only 4.1 percent lower than a year ago, whereas they were considerably farther under last year's levels earlier this year.

Gasoline demand has been running about 6 percent larger this year than last year. But gasoline stocks even as high as those held last year are not justified, as the inventories last spring were greatly excessive.

Materially lower gasoline stocks than those now hled would be economically desirable, and in failing to curtail refinery runs sufficiently to permit withdrawals of gasoline from storage, the industry is inviting market difficulties.


REFINERY RUNS OF CRUDE OIL
BARRELS DAILY
WEEKLY DATA
GASOLINE DEMAND
ESTIMATED
GASOLINE STOCKS
BARRELS
WEEKLY DATA
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1937
1938
1939

Fewer and Shallower Wells Being Drilled in 1939

By L. J. LOGAN, Associate Editor

THIS year is bringing the drilling of not only fewer wells but also shallower wells; and consequently, footage drilled is running considerably lower in 1939 than in 1938.

In the first quarter of this year, well completions in the United States were 12.9 percent less numerous than in the corresponding period last year. But footage drilled was down 17.4 percent. For the average depth of completions in the country as a whole was 5.2 percent less in the first three months of 1939 than in that period of 1938.

United States completions totaled 5831 in the first quarter of 1939, compared with 6697 in the similar period of 1938. The completions in this year's first quarter had combined depths of 17,884,304 feet, whereas those in the corresponding period last year involved 21,650,563 feet of hole.

The average depth of the wells completed in this year's first quarter was 3070 feet, as compared with an average of 3240 feet for the 1939 first quarter completions, a decrease of 5.2 percent.

It is noteworthy, however, that 1938 as a whole did not show as great an average drilling depth as did the first quarter of the year; and therefore, the average so far this year compares more favorably with the full year than with the initial quarter of 1938.

The average depth of 3070 feet for the completions in the first three months of 1939 was 2.4 percent less than the average of 3144 feet for all of 1938.

Despite the decrease from last year in the average drilling depth, the wells that are being completed this year are comparatively deep, being in excess of the depths for years prior to 1938, when all previous records were broken.

After 1934, each year brought an increase in the average depth until this year, which has reversed the trend.

However, as previously pointed out, the actual turning point in the trend occurred in 1938, as the average depth was exceptionally great for the first quarter of the year but smaller for the year as a whole, because of a tapering off of deeper drilling.

Undoubtedly, the decline of the average depth in the latter part of 1938 and further in 1939 has been due in considerable part to curtailment of drilling, which in turn has resulted from the reductions of crude oil prices last fall.

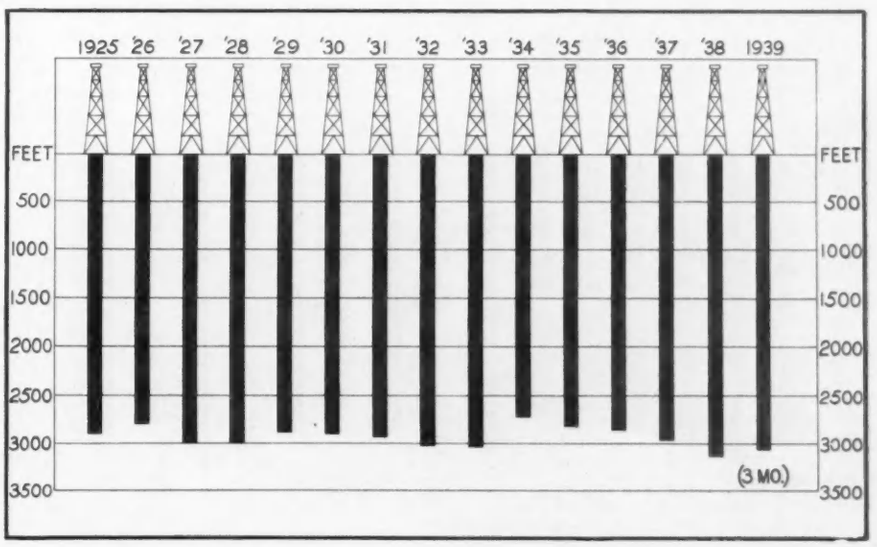
The less favorable markets naturally caused some curtailment of drilling and a decline in completions. And the drilling which was curtailed or eliminated naturally included particularly the deeper developments. For deep wells are relatively expensive, and when crude prices become less attractive, there is less inducement to carry on the deep drilling.

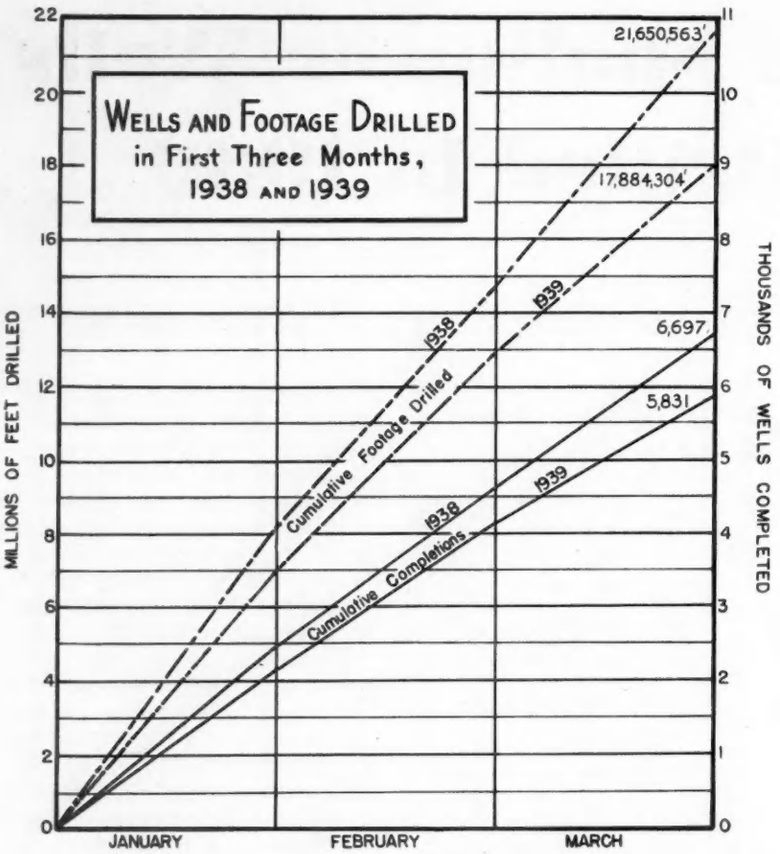
The retarding influence of the less favorable market for crude oil on deeper drilling has been demonstrated, for example, in both the Louisiana and Texas divisions of the Gulf Coast, which constitute the outstanding deep-drilling region of the world. In the Louisiana Gulf Coast, completions were 10.6 percent lower in the first quarter of 1939 than in the corresponding period of 1938; but footage was down 15.5 percent, as the average drilling depth was off over 5 percent, from 5851 to 5555 feet per well. On the Texas Gulf Coast, completions were 1.7 percent more

Average Drilling Depth Is Smaller This Year

YEAR	Wells Completed	Footage Drilled	Average Depth per Well
1925	25,406	73,677,400	2900
1926	28,995	81,186,000	2800
1927	22,301	66,903,000	3000
1928	19,964	59,892,000	3000
1929	23,463	67,925,285	2895
1930	19,848	57,557,200	2900
1931	11,716	34,259,110	2924
1932	14,290	43,033,422	3011
1933	12,170	36,904,500	3032
1934	18,949	51,748,906	2731
1935	22,669	64,112,400	2829
1936	26,935	77,071,920	2861
1937	33,112	99,922,908	2974
1938	27,528	86,485,040	3144
First 3 Months:			
1938	6,697	21,650,563	3240
1939	5,831	17,884,304	3070

Average Drilling Depth Shows Decrease This Year





numerous, but footage was off 5.2 percent, as wells averaged only 5658 feet, or 7 percent less than the 6082 feet for the initial quarter of 1938.

For Texas as a whole, completions were down 19.3 percent but footage was off 22.7 percent, as the average depth was 4.3 percent less, having decreased to 3490 feet for the first quarter this year, from 3648 feet per well in the similar period last year.

The northern as well as the coastal district of Louisiana has had less and shallower drilling this year than last year. For the first quarter, North Louisiana completions were off 22 percent and footage 39.4 percent, as completion depths averaged 3660 feet, or 22.5 percent less than the 4720 feet for the similar period last year.

Oklahoma completions were off 17.1 percent, and footage was down 22.8 percent, as wells averaged only 2735 feet, or 7 percent less than the 2940 feet in the initial quarter of last year.

Kansas furnished 38.9 percent fewer completions and 41.5 percent less footage, the average depth of new wells having declined 4.1 percent, to 3141 feet from 3275 feet.

Michigan drilling reflected the dominant influence of the new, relatively shallow fields of the southwestern part of the state, as well as the less favorable crude oil market. Completions in the state in the initial quarter were up 40.6 percent, but footage drilled was down 24.4 percent, new wells having averaged only 1624 feet in depth, or 46.3 percent less than the 3025 feet for the initial quarter last year.

California has had a sharp decline in completions, but footage has been a little greater this year than last year, as the average drilling depth was 5455 feet for the 1939 initial quarter, or 12 percent more than the 3915 feet for the similar period last year.

Kentucky, New York, Ohio, and Pennsylvania have had declines in completions that have more than offset small increases in average drilling depths, and consequently, those states show material declines in footage drilled.

West Virginia has had both fewer and shallower completions, and footage drilled has come down sharply.

Whereas most of the above mentioned states and districts have had fewer and shallower completions this year than last, Arkansas, Colorado, Illinois, Montana, and New Mexico have furnished more new wells in 1939 than in 1938. And these areas of more extensive drilling also have had further increases in average drilling depths. Consequently, they are showing more footage drilled this year than they did last year.

Completions, Depths, and Footage Drilled Decline in 1939

STATE OR DISTRICT	COMPLETIONS			FOOTAGE DRILLED			AVERAGE DEPTH*		
	1939 1st Quarter	1938 1st Quarter	Percent Change	1939 1st Quarter	1938 1st Quarter	Percent Change	1939 1st Quarter	1938 1st Quarter	Percent Change
Arkansas	56	49	+ 14.3	327,585	285,934	+ 14.7	5,850	5,835	+ 0.3
California	239	317	— 38.5	1,304,119	1,238,820	+ 5.3	5,455	3,915	+39.4
Colorado	6	3	+ 50.0	20,939	17,901	+ 16.7	3,500	5,965	—41.3
Eastern States	1,768	1,637	+ 8.0	3,265,204	3,225,570	+ 1.2	1,848	1,980	— 7.1
Illinois	864	186	+365.0	1,519,696	451,507	+236.5	1,760	2,425	+27.4
Indiana	30	30	.....	41,261	35,324	+ 17.1	1,375	1,178	+16.7
Kentucky	149	165	— 9.7	227,132	188,598	+ 20.7	1,522	1,264	+20.4
New York	†115	†191	— 39.8	†207,034	†324,589	— 36.2	1,798	1,699	+ 5.5
Ohio	194	240	— 19.1	393,643	471,387	— 16.5	2,030	1,962	+ 3.4
Pennsylvania	†278	†610	— 54.4	†518,155	1,138,220	— 54.5	1,869	1,862	+ 0.4
West Virginia	138	215	— 35.8	358,283	615,945	— 41.7	2,595	2,865	— 9.4
Kansas	284	465	— 38.9	890,346	1,522,782	— 41.5	3,141	3,275	— 4.1
Louisiana	223	264	— 15.5	1,064,121	1,416,010	— 24.9	4,777	5,355	—10.8
North Louisiana	92	118	— 22.0	337,363	556,668	— 39.4	3,660	4,720	—22.5
South Louisiana	131	146	— 10.6	726,758	859,342	— 15.5	5,555	5,881	— 5.5
Michigan	270	192	+ 40.6	439,128	581,174	— 24.4	1,624	3,025	—46.3
Montana	22	12	+ 83.2	48,151	21,688	+122.2	2,185	1,810	+20.8
Nebraska	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico	138	121	+ 14.0	527,052	446,947	+ 17.9	3,815	3,685	+ 3.5
Oklahoma	440	531	— 17.1	1,205,074	1,563,529	— 22.8	2,735	2,940	— 7.0
Southeastern States	2	6	— 66.7	3,915	24,985	— 84.3	1,957	4,155	—52.4
Alabama	1	.....	.....	720	.....	.....	720	.....	.....
Florida	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mississippi	1	5	— 80.0	3,195	24,985	— 87.2	3,195	4,980	—35.8
Texas	2,485	3,081	— 19.3	8,690,620	11,239,285	— 22.7	3,490	3,648	— 4.3
East Texas Field	191	605	— 68.4	749,260	2,207,600	— 66.0	3,925	3,664	+ 7.1
Rest of East Texas	66	134	— 50.7	287,237	609,177	— 52.9	4,345	4,540	— 4.3
North Texas	367	479	— 23.4	801,821	1,117,707	— 28.3	2,182	2,460	—11.3
South Texas	702	645	+ 8.8	2,723,995	2,359,443	+ 15.4	3,878	3,655	+ 6.1
Corpus Christi Area	312	263	+ 18.6	1,863,853	1,370,775	+ 36.0	5,973	5,230	+14.2
Laredo	274	271	+ 1.1	656,038	764,959	— 14.1	2,395	2,818	—14.6
San Antonio Area	116	111	+ 4.5	204,104	223,709	— 7.6	1,760	2,010	—12.4
Texas Gulf Coast	366	359	+ 1.7	2,071,691	2,184,142	— 5.2	5,658	6,082	— 7.0
Texas Panhandle	80	190	— 58.0	240,963	574,993	— 58.3	3,120	3,012	+ 3.6
West Texas	489	606	— 19.3	1,687,161	2,055,735	— 17.4	3,440	3,390	+ 1.5
West Central Texas	94	63	+ 49.2	128,492	130,488	— 1.5	1,368	2,140	—36.0
Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wyoming	28	19	+ 47.4	98,050	65,929	+ 48.7	3,510	3,472	+ 1.1
Total United States	5,831	6,697	— 12.9	17,884,304	21,650,563	— 17.4	3,070	3,240	— 5.2

* Slide-rule accuracy. † Includes water-input wells.

Selection of Back-Side Pumping Equipment

By KENNETH N. MILLS, Chief Engineer,
American Manufacturing Company of Texas

Pumping Series
Article No. 4

Operators using well-founded methods will be repaid many times for their prudence by a long period of trouble-free operation.

DURING the past few years, back-side pumping has expanded from a pumping system used on relatively shallow wells to a practical method for pumping medium volume deep wells. This expansion has been made possible by improvements in bearings, the general design of back-side pumping equipment and pull rods.

The continued use of this system of pumping on deep wells will depend on the successfulness of the installations over a number of years. The degree of success experienced with them will depend entirely on the soundness of the engineering principles used in selecting and installing the equipment used in these installations.

The introduction of combination equipment, such as the counterbalanced inverted stroke post and the inverted stroke post with hookoffs built in, has been a big factor in reducing the initial investment. This has helped to increase the salvage value of the installation, as it has reduced the amount of material required in foundations. The use of compact geared reduction units and multiple-cylinder engines has presented the possibility of further savings in installation costs.

The torque diagram in Figure 1 shows that the reducer load factor in back-side pumping is a function of the number of wells being pumped from the reducer, and that, when wells of equal weight are being pumped equal lengths of stroke, a reducer that has sufficient capacity to pump two of the wells will have sufficient capacity to pump four such wells, if they are connected to two cranks so they oppose each other and the phase relationship of the cranks is correct. Also, as the number of wells pumped with one prime mover is increased, a smaller amount of excess horsepower capacity per well is required, because the ratio of the peak power to the mean

FIGURE 1
Torque diagram for four well hook-up.

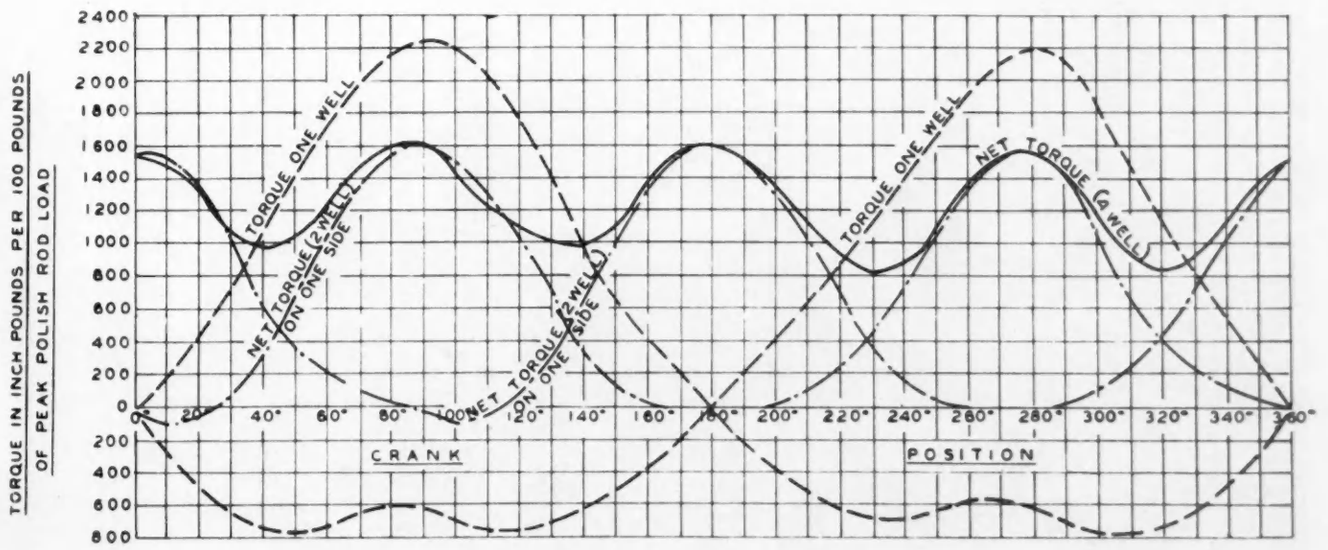


TABLE 1

Size, Inches	Area at Root of Threads, Sq. Ins.	Load Rating, Lbs.
1 3/16"	0.693	5,060
1 1/4"	0.890	6,500
1 5/16"	1.294	9,450
1 7/16"	1.744	12,750
2"	2.300	16,800

power decreases as the number of properly connected wells increases. This condition decreases the investment per well in speed reducer and prime-mover, and tends to give increased life to these parts as their loading is less drastic when pumping more than two wells.

In designing a back-side pumping installation, one should start at the bottom of the hole, as the size of the plunger used will determine the size of all the equipment from that point through the prime mover. For this reason, it is advisable to select the smallest plunger that will handle the amount of fluid ultimately expected in the maximum economical period of time.

When the sizes of the sub-surface equipment are determined, the magnitude of the load imposed on the surface equipment can be determined. The maximum polish rod load can be found by solving the API well load formula:

$$P = (W_o + W_R) \quad (1 + \frac{SxSPM}{5400}) \qquad (1)$$

Where:

P = Max. Polish Rod Load in lbs.
W_o = Weight of Fluid in lbs.
W_R = Weight of Rod in lbs.
S = Polish Rod Stroke in inches.
SPM = Stroke per minute.

Speed reducer with two counterbalanced stroke posts, pumping four wells.

TABLE 2

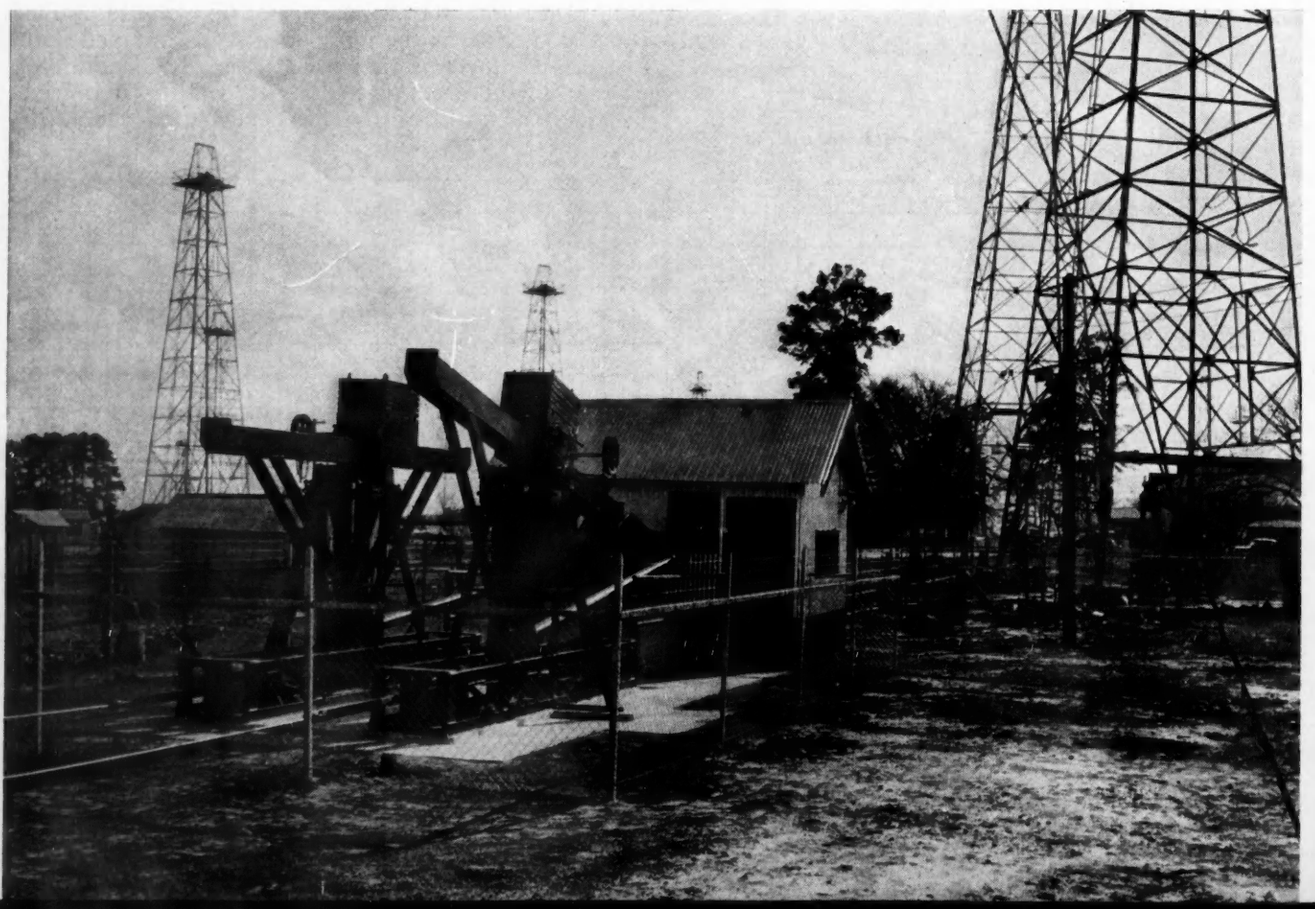
Approximate Values of Rod Line Carrier Friction Losses

Pull Rod Sizes	Friction Loss in Lbs./100' of Rod Line (4 Rod Line Carriers)	
	Wood Carriers	Roller Carriers
5/8"	27	11
3/4"	40	13
7/8"	73	16
1"	105	19

The maximum polish rod load thus determined can be used to select the pumping jack, and when multiplied by the jack multiplication ratio JR, it will give the maximum pull rod load at the jack. The jack ratio is defined as the ratio of the polish rod stroke to the pull rod stroke.

The pull rod load thus determined can be used to select the rod line equipment between the jack and the next point of multiplication or reduction in the rod line. The first piece of equipment encountered is the turnbuckle at the jack, and it is one of the most commonly misapplied pieces of rod line equipment. Due to the adverse stress condition created by the threads, the maximum stress at the root of the threads in a mild steel turnbuckle should be limited to about 7300 lbs./sq. in. If an alloy steel turnbuckle is used, a higher unit stress can be used, and in this case, the maximum allowable stress will depend on the type of steel used as well as its heat treatment. The ratings on several popular sizes of mild steel turnbuckles are shown in Table 1.

The next problem to be solved is the size rods to be used in the rod line and method to use in supporting it. The only part of this problem that will be dealt with is the method used to support it, as its method of support will effect the size of the equipment at the power end of the rod line. Referring to Table 2 it can be seen that when large pull rods are used rod line friction losses can reach a staggering figure. One of the common methods of reducing rod



line friction is so-called "catenary" or sagged rod line construction. Off hand, this method appears to be satisfactory, but a little study will reveal that it is not so effective as using roller rod line carriers to support the rod line. It is true that with wood rod line carriers and a properly constructed catenary rod line, the lift friction losses will be less than those in an equivalent flat rod line, but this is not true on the down stroke, because during this part of the cycle practically the entire weight of the rod line is imposed on the carriers. For this reason, the down stroke rod line friction in a catenary rod line is high, and the force thus lost is not available to counterbalance the opposing well. In a flat or sagged rod line entirely supported on rollers, this is not the case, as the friction loss in the rod line is low throughout the pumping cycle.

If any multiplication or reduction is used in the rod line between the jack and the power take-off, its effect on the rod line load between the multiplier and the power take-off must be considered. The rod line load between the multiplier and the power take-off will be the rod line load on the jack side of the multiplier by its ratio of multiplication. The stroke post multiplication ratio is defined as the pull rod stroke on the jack side of the multiplier divided by the pull rod stroke on the power side of the multiplier. The load thus determined at the power take-off can be used in selecting the power take-off.

When selecting a reducer for this type service, two factors must be considered, first, the overhung load capacity of the slow speed shaft must be at least equal to the pitman load, and second, the peak torque rating of the speed reducer used must be at least equal to the peak torque imposed on it by the wells being pumped.

The dynamometer card, shown in Figure II, is the average of about 35 dynamometer cards taken on wells ranging from 2000 feet to 4200 feet in depth and being pumped at speeds from 16 SPM to 25 SPM. It can be seen on this card that the maximum and minimum well load occur near mid-stroke, and the minimum well load is approximately 0.25 times the peak well load.

In a back-side hook up, with no multiplication in the rod line, the maximum horizontal component of the pitman pull will be:

$$PP\ Max = (P_1 \times JR_1 + RF_1)SR \qquad (2)$$

The maximum horizontal component of the pitman load created by the opposing well at this time (down stroke load) will be:

$$PP\ Min = (0.25P_2 \times JR_2 - RF_2)SR \qquad (3)$$

Where:

P_1 & P_2 = Maximum Well Loads as determined by equation 1, in pounds

JR_1 & JR_2 = Jack Multiplication Ratios

RF_1 & RF_2 = Rod Line Friction Loss as determined from Table II, in pounds

SR = Stroke Post Multiplication Ratio

The net horizontal component of the pitman load will be the difference between PP_{max} and PP_{min} as determined by equations (2) and (3). The peak torque imposed on the reducer can be found by the following equation, and should be based on the combination giving the largest value of NP.

$$PT = NP \times \frac{CS}{2} \qquad (4)$$

Where:

PT = Peak Torque in inch pounds

$NP = PP_{max} - PP_{min}$

CS = Crank Stroke, in inches

The maximum overhung load OL on the unit will depend on the maximum angle A between the pitman and the horizontal and can be found by the equation:

$$OL = \frac{NP}{\text{Cos } A} \qquad (5)$$

In the case of a four well hook-up with two opposing wells connected to each crank and the two cranks set at 90°, the peak torque imposed on the reducer will be equal to the largest value of the peak torque

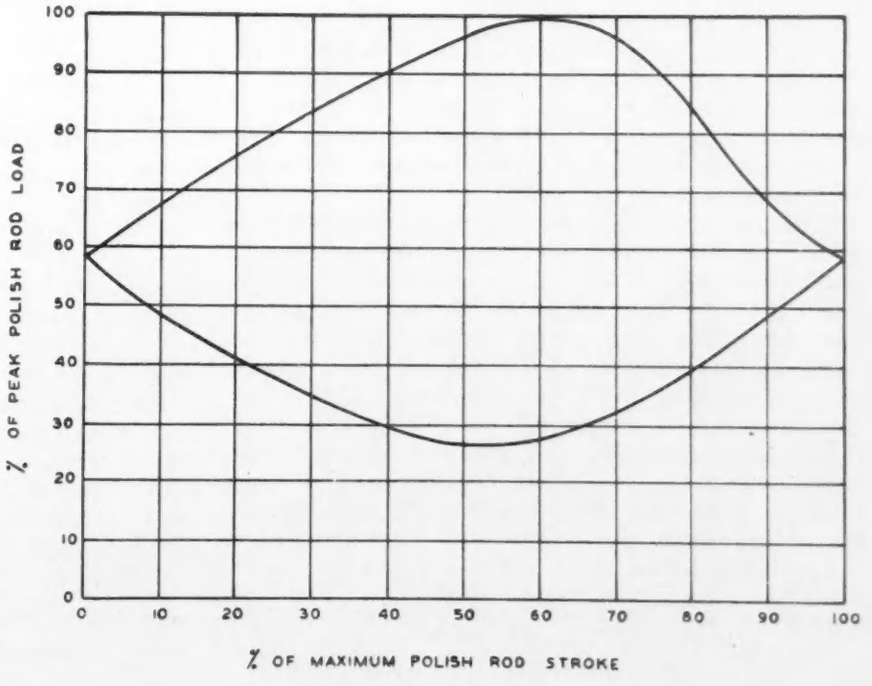


FIGURE 2

Typical polish rod dynamometer card.

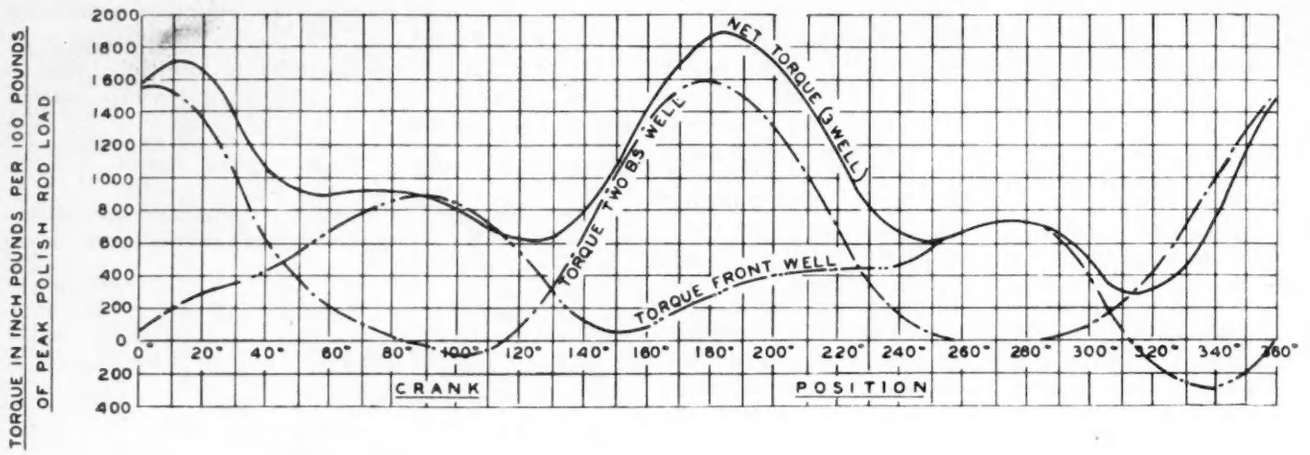


FIGURE 3
Torque diagram for three well hook-up.

imposed on the reducer by any two opposing wells. The wells on each side of this type hook-up should be provided with adjustable counterbalancing devices capable of supplying a counterbalance force equal to the largest down stroke load imposed on the reducer. With this type installation, it is possible to keep the peak torque load on the reducer within the allowable limit regardless of the number of wells being pumped.

The so-called three well hook-up is one of the most popular types of back side hook-ups, because if large volumes of fluid are expected at some future date, the beam well equipment can be selected to handle it. When this condition arrives, the back side pumping can be abandoned. A torque diagram covering this type pumping is shown in Figure 3.

In this type hook-up, the peak torque imposed on the reducer is approximately equal to the greater of the torques imposed on the transmission system by either the back side wells or the beam wells. The peak torque capacity of the reducer used in this system must be equal to or greater than the peak torque thus determined, and the back side wells should be provided with an adjustable counterbalance. It can be shown that in this system of pumping, the peak torque imposed on the reducer is slightly less when the angle between the front and back cranks is such that when the beam well crank is normal to its pitman the back side crank is normal to its pitman.

The most common form of two well hook-up uses either the "V" type second well connection or the bell crank type second well connection on a unit beam with the wells so connected that they oppose each other. This method of pumping can be used to pump three wells, but this is not advisable, as the reducer is called on to lift two wells at the same time, requiring a larger reducer. The peak torque imposed on the reducer in the case of the two opposed well hook-up can be determined with the following equations where the letter with the subscripts 3 apply to the beam well and those with the subscripts 4 apply to the second well:

$$NT_1 = (P_4 \times JR_4 + RF_4)\frac{ST}{2} - 0.25P_3 \times \frac{CS}{2} \qquad (6)$$

$$NT_2 = P_3 \times \frac{CS}{2} - (0.25P_4 \times JR_4 - RF_4)\frac{ST}{2} \qquad (7)$$

The correct amount of counterbalance effect to be used can be found by equation:

$$CB = \frac{NT_1 - NT_2}{2} \qquad (8)$$

Where:

ST = Unit Second Well Connection Stroke, in inches
CB = Counterbalance effect, in inch pounds
NT_1 & NT_2 = Peak Torque for each well, in inch pounds

All economically practical methods of reducer selection are based on all the wells in the system being pumped throughout the pumping cycle. If the system is to be pumped with part of the wells hooked off, either the reducer must have sufficient capacity to withstand the unbalanced load or some form of counterbalance must be used. At the present, three types of back side counterbalances are in common use. These methods are the jack counterbalance, the counterbalanced stroke post, and the counterbalanced back side crank. The possible counterbalance effect obtainable with each of these systems is practically the same when two wells pumping from one crank is considered, and under this condition they are only effective as differential balances, i.e., to equalize the torque loads created by two wells of unequal weight. When one well pumping is considered the crank and stroke post type balances present the possibility of obtaining a greater amount of counterbalance than is obtainable with the jack counterbalance.

The only advantage the jack counterbalance might appear to have over the other types of counterbalance would be lower rod line loads. This advantage will exist in a limited number of installations, because the jack type counterbalance changes the vibratory characteristics of the elastic system and may induce harmful vibrations into it instead of decreasing the imposed loads.

The operator who selects and installs his pumping equipment by conservative, well founded methods will be repaid many times for his prudence by a long period of trouble free operation. He will reap these dividends during that period of the well life in which a minimum amount of production time loss and expenditure is desirable.

NEXT WEEK: *"Locating and Counterbalancing Central Powers Involves Many Variables."*

Maintenance of Portable Pipe Line Field Pumping Units

By N. G. MOORE*
Empire Pipe Line Company, Gladewater, Texas

RECIPROCATING, rotary, and centrifugal pumps are commonly used on portable units and are powered by either single- or multiple-cylinder steam, gas, or gasoline engines and by electric motors. The power is transmitted from engines, or motors, to pumps by shaft and coupling (direct connection), or by flat or V-belts.

The present trend is to reciprocating pumps driven, or powered, by multiple-cylinder engines. In this paper will be discussed the maintenance and operation of this type of unit.

All field-pumping units under 7000 pounds gross weight may be considered as portable. These units are mounted on skids, four-wheel trailers, two-wheel, or semi-trailers, and may be moved by truck from one location to another.

A very efficient type of the low-pressure portable unit is the 6x6-inch duplex reciprocating pump, direct connected to 30-horsepower four-cylinder industrial engine, mounted on a two-wheel trailer without springs and making use of the manufacturer's skid base as a trailer frame. These pumps may be equipped with oil-cargo suction and discharge hose. The suction should be 200-pound test and the discharge 450-pound test. Four-inch handle-bar unions should be provided for each end of hose. Unions of this type are very fast in connecting or disconnecting these units. These units can be moved easily; but, on account of not being provided with spring mounting, they should be loaded on a truck when they are to be moved long distances. When on location, they can be connected, or disconnected, in 10 minutes, provided line connections are available. These units are equipped with combination gas and gasoline carburetors, oil filters, air filters, high-temperature cut-out, and low-oil-pressure cut-out. They will pump 275 barrels per hour against 150-pound pressure. This type is well adapted to prorated fields and leases which have to be pumped but have only one or two wells.

Auxiliary equipment for portable pipe line field pumping units can be classed in three groups: Accessory equipment, protective equipment, and safety equipment.

Accessory equipment includes ignition systems, cooling systems, generators, starters, batteries, lube-oil filters, gas carburetors, and gasoline carburetors.

Protective equipment includes air cleaners, high-temperature cut-offs, low-oil-pressure cut-offs, time clocks, gas regulators, and gas volume chambers.

Safety equipment includes all guards and starters.

Magneto ignition is safer and more dependable than is any other type of ignition system. Those equipped with impulse are easily started either by hand or by electrical starter; such ignition also adapts itself easily to control apparatus; such as time clocks, high-temperature cut-outs, and low-oil-pressure cut-outs. Trouble has been experienced with some of the later-model magnetos on account of condensation inside of the magneto. This trouble can be remedied by the manufacturer by changing a few parts at a nominal cost.

Upper-cylinder lubricators help to prevent loss of compression caused by sticking piston rings and by burning and sticking of valves.

Gas and gasoline, or combination, carburetors are desirable equipment, as either gas or gasoline can be used as fuel, depending upon the cost and convenience. Most industrial engines can be run on dry or natural gas by the installation of a combination carburetor—without any other changes. A combination carburetor should be chosen which has a positive gas shut-off when the engine is not running, or the hazard of escaping gas will exist, if the engine should stop when an attendant is not present. In connection with gas and gasoline carburetors, gas volume chambers, positive regulators, and ample size supply lines should be provided. Gas as a fuel in the East Texas field is chiefly supplied from residue gas lines and has the following properties: specific gravity 1.0, 1550 BTU content.

	MOL %		G.P.M.
Methane and air	65.16		
Ethane	21.39		
Propane	12.91		
Iso butane	0.23		0.08
Nor butane	0.26		0.08
Total butanes		0.49	
Pentanes and heavier	0.05		0.02
Total	100.00		0.18

Orsat Analysis

Carbon dioxide	0.4%
Oxygen	0.6%
Air	3.0%

Maintenance Problems

Wear. All portable units have movable and stationary parts. The movable parts move along the stationary parts and wear according to the amount of lubrication, the hardness of the metal, and the amount of abrasive matter present. This wear can be reduced by proper lubrication and by the use of an

* Before Pipe Line Section, Oil-World Exposition Technical Conference, Houston, Texas, April 24-29, 1939.

YEAR 1938

Reciprocating Pumps Cost—No Time Clock

	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7[4]	No. 8[4]
Size pump	3 x 10	5 x 10	4 x 10	5 x 10	5 x 10	4 x 6	6 x 6	6 x 6
Average pressure	125	200	125	50	125	250	Various	Various
Horsepower engine	33	43	33	43	38	33	33	33
Average R. P. M.	1240	1100	1240	1100	1200	1240	1240	1240
Lube Oil[1]	7.42	21.70	15.52	9.09	8.64	9.58	10.60	4.72
Gas[2]	.....	40.18	.....	24.73	37.50	50.00	50.04	1.30
Gasoline[3]	18.33	9.59	52.19	8.83	3.43	.34	48.91	39.78
Operating labor	99.05	202.98	192.63	214.14	128.48	237.92	347.05	67.23
Car allowance	47.38	71.96	59.17	44.41	62.96	130.76	106.13	31.81
Repair parts	41.54	7.45	77.98	.40	.....	.....	14.02	4.54
Repair labor	13.75	.....	22.75	.....	.....	.....	49.26	20.63
Incidental expense	.....	.....	3.65	1.20	.....	.80	.30	.....
Total cost	227.47	353.86	423.89	402.80	241.01	429.40	626.31	170.01
Hours operated	238	238	571	533	143	674	538	55
Crude pumped, bbls.	19,000	50,000	85,753	111,880	30,000	74,169	145,266	15,000
Cost per barrel	.012	.0071	.0049	.0036	.008	.0057	.0043	.0111
Cost per 100,000 bbls.	$1,200.00	$710.00	$490.00	$360.00	$800.00	$570.00	$430.00	$1,100.00

[1] Lube Oil 36¢ per gallon. [2] Gas—Units 5, 6, $5.00 per month flat rate. Gas—Unit 2, 22¢ per M Cu. Ft. Gas—all other units operate on lease gas. [3] Gasoline—13¢ per gallon—Net. [4] Portable unit mounted on trailer.

efficient air filter and buildings to keep dust and sand from the moving parts. A unit should never be allowed to operate without the protection of an air filter.

Breakage is negligible where units are operated under conditions for which they are designed. Experienced welders are employed in most pipe line crews and lower the cost of operation by welding or brazing any breakage they are called upon for.

Leakage of crude and lube oils is costly and should be prevented by repairs. These leaks are caused by poor packing, breaks, bad gaskets, and poor design.

Leaks occurring from packing, breaks, and gaskets can and should be prevented by immediate repairs. Leaks from poor design can be remedied with the help of a competent machinist. One portable pump in service over 10 years used $96.00 worth of lube oil in one year; the three other pumps used approximately the same amount of oil. This lube was leaking along the plunger rods from the gear case of the pump through the retainer washer. To prevent this leakage all four units were repaired at a cost of $4.00 for labor and $7.00 for machine-shop charge, or $3.75 per unit. Crude oil leakage can be eliminated by piping all drains to a sump barrel made from a discarded oil drum and then pumping it back into the line.

Lubrication. Only two grades of oil are necessary for the proper lubrication of these pumping-unit engines. Either S.A.E. 10, or 20, and S.A.E. 30, which is filtered on each unit continuously and changed at approximately 100 hours. It is changed the next month, or at the first of the following month, when the unit has reached 100 hours operation.

Each month, right after the first of the month, each pump should be lubricated if the total running time is 100 hours, or more, greased, cleaned, and the spark caps checked and repacked if needed. A sample of lube oil should be saved to provide a visible record of the condition of that engine after 100 hours as compared with other engines. Any minor repairs can be made at this time.

Pump Buildings

Where one pumping unit handles oil from several leases and is more or less a permanent installation, a pump house of corrugated iron 2x4-inch frame and 4x6-inch sills should be provided. A well-designed pump house is well ventilated. Ample ventilation can be secured by covering the gable ends with hardware cloth, and by extending the eaves in order to keep the rain out. The sills should be laid above the ground on building tile to keep them from rotting and to leave a space so that air can come in under the building and up through the gable ends of the building.

A door should be built in each end of the building, one large enough to remove the pumping unit without damaging, or altering the building, the other for safety and for additional ventilation. For both light and ventilation two four-pane 8x10-inch windows set horizontally in a sliding frame may be provided one each side of the building. This type of building has proved very satisfactory in East Texas.

Pump Repairs

Very few repairs are necessary on the present portable pumping equipment and such repairs consist of the replacement of worn parts, which can be done in the field.

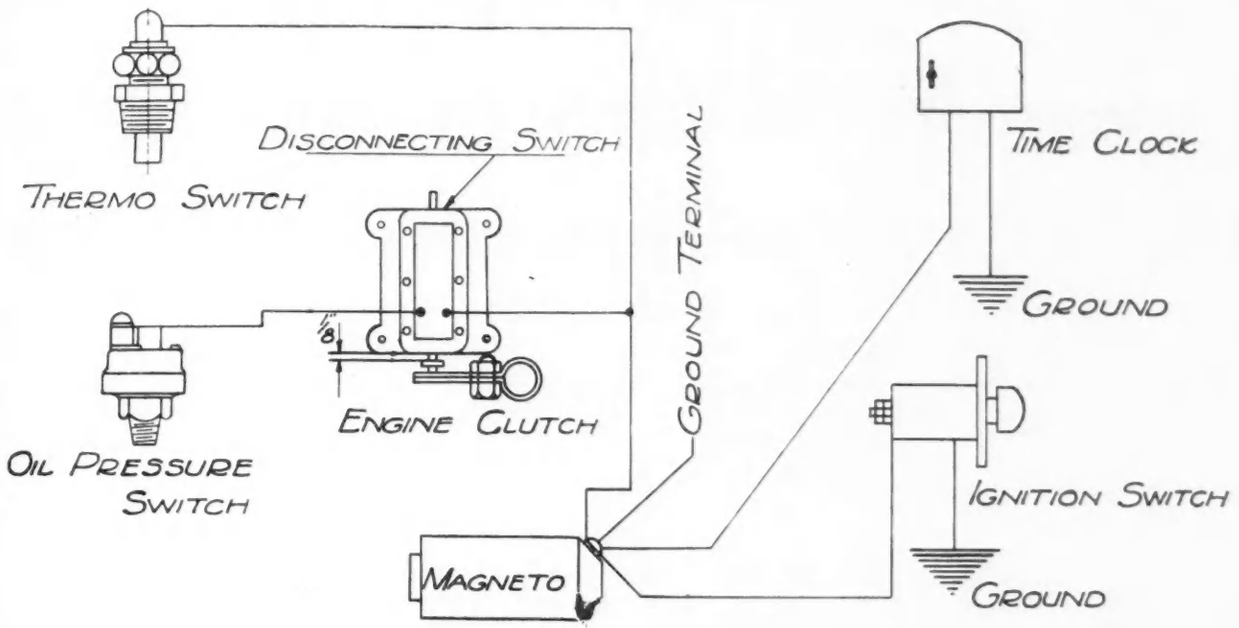
Painting of Pumps. All portable pumping equipment should be kept clean and painted, not only to prevent rust but to act as an incentive to the man operating the unit to give the unit his best attention, as a clean unit will be

YEAR OF 1938

Pumps Operating by Time Clocks or Similar Conditions

	No. 9	No. 10	No. 11	No. 12	No. 13	No. 14	No. 15	No. 16
Type pump	Recip.	Recip.	Recip.	Recip.	Rotary	Rotary	Recip.	Recip.
Size pump	5 x 10	4 x 6	6 x 6	6 x 6	2 inch	2 inch	4 x 6	4 x 6
Average pressure	225	225	25	50	50	50	225	225
Horsepower engine	53	32	33	32	33	33	32	32
Average R. P. M.	1000	1200	1240	1200	1240	1240	1200	1200
Lube Oil[1]	59.50	29.75	13.90	11.65	13.13	10.53	9.56	5.55
Gas[2]	.....	.....	.....	.....	.....	.....	.....	.....
Gasoline[3]	.....	.....	1.70	.....	111.57	29.12	5.27	28.03
Operating labor	.....	.....	.....	.....	260.73	149.08	89.56	126.96
Car allowance	.....	.....	.....	.....	88.74	44.90	30.77	36.61
Repair parts	3.00	12.08	5.88	9.30	45.30	230.22	1.60	.....
Repair labor	.....	5.00	7.50	4.00	52.75	65.88	.....	.....
Incidental expense	.....	.....	.....	.....	.....	.....	.....	.....
Total cost	62.50	46.83	28.98	24.95	567.07	529.73	136.76	197.15
Hours operated	604	643	142	330	447	332	509	202
Crude pumped, bbls.	126,935	70,777	38,354	89,099	44,709	33,221	56,016	22,190
Cost per barrel	.00049	.00066	.0007	.00028	.0126	.0159	.0024	.009
Cost per 100,000 bbls.	$49.00	$66.00	$70.00	$28.00	$1,260.00	$1,590.00	$240.00	$900.00

Note: Pumps No. 13-14-15-16 not operated full year by time clock.
Pumps No. 13-14 flooded by Sabine River, repair charges and operating labor ran cost up; otherwise would have average cost.
[1] Lube Oil—36¢ per gallon. [2] Gas Units 9, 10, 11, 12, 13, 14, 15, 16 operate on lease gas. [3] Gasoline —13¢ per gallon—Net.



Wiring Diagram, Semi-Automatic Units, Empire Pipe Line Company

Engine can only be started when clutch is disengaged.

Thermo switch attached to cylinder head will short magneto and stop engine when water temperature reaches 200° F.

Low oil pressure switch will short magneto and stop engine if oil pressure drops to 3 pounds.

Oil pressure disconnecting switch is used to disconnect low oil pressure switch so engine can be started after it has been stopped intentionally.

Oil pressure disconnecting switch is operated by arm clamped on clutch throwout shaft. This arm should be adjusted around shaft so that when clutch is engaged the small collar on end of switch shaft is ⅛-inch from switch housing.

given more attention than will a dirty one.

Maintenance of the Engines. If the engines built today are equipped with the proper accessories, very little maintenance expense can be expected. This expense will include radiator repair, tightening of bearings, replacement of piston rings, reboring, resleeving, or exchanging cylinder blocks, and replacing pistons. All this can be done better, and to greater advantage, by the manufacturer's representative, or in the pipe line company's shop. Where operations are confined to one immediate locality, time can be saved, operation continued, and better repair jobs secured, by moving unit to be repaired into the shop and replacing with another portable unit.

The best practical test of when repairs should be made on pistons, piston rings, and piston rods, is the oil consumption; and, as every one has a right to his own opinion, the responsibility of answering this question will be left as it is.

Semi-Automatic Operation

Portable pumping units can be operated successfully by time clocks, provided they are checked and started manually. When equipped with low-oil-pressure cut-outs that function at 3 pounds, high-water-temperature cut-outs which function at 200° F., a disconnecting switch to disconnect low-oil-pressure cut-out until engine has started and the oil pressure is above 3 pounds attached to the clutch shaft will operate automatically and not require the attention of the operator, who might forget to put the low-oil-pressure cut-out in service after starting the engine.

For the time clock a single-pole, 1650-watt, enclosed in outdoor case, operated by a 10-day, hand-wound clock with mercury tube switch can be used. The total cost of equipment necessary for changing is $50.00. This cost includes wiring, clock, low-oil-pressure cut-out, high-water-temperature cut-out, disconnecting switch, and necessary labor. It is considered advisable to install the clock separately from the pump, so that the vibration from the pumping unit may be eliminated.

At present eight units have been so equipped, the first unit two years ago. These units are set near lease tanks and the pipe line gauger checks each unit before starting, starts the unit, bleeds any air from the suction line, and sets the time clock to a pre-determined time calculated from the amount of oil to be pumped. The results have been very satisfactory. One unit's fan came loose, cutting the tubes in the radiator, causing the unit to run hot. The high-water-temperature cut-out shorted the magneto, shutting the unit's engine down without damage. Another unit's oil line to the filter snapped in two, and the oil pressure dropped below three pounds. On account of the low oil pressure, the low-oil-pressure cut-out shut down the engine without damage.

It is not unreasonable to expect cost as low as one-half mill per barrel on manually operated units. On semi-automatic units you can expect a much lower cost.

Practical Method of Arresting Pressure Surges in Discharge Piping of Reciprocating Pumps

By J. B. HARSHMAN*
Master Mechanic, Stanolind Pipe Line Company

PRESSURE surges in the discharge piping of reciprocating pumps has always been a troublesome problem in pipe line operations. Breakage of pump cylinders, piping, fittings, gate valves, etc., have been common occurrences. Little has been known concerning the actual cause of such failures. In many instances the cause has been attributed to faulty design, defective machine work or poor materials, without giving due consideration to the forces resulting from these surges. Although considerable research has been done on the origin and effect of water hammer in piping systems it was not until the work of W. D. Pomeroy[1] in 1928 that the pipe line engineer had any accurate information to guide him in the analysis of this problem.

Pressure surges exist, to a certain extent, in the discharge piping of any reciprocating pump. The intensity of these surges depend on:

1. Distance of manifold from pumps, or reflecting point in discharge piping.
2. Design of manifold and discharge piping.
3. Number of pumps operating in parallel.
4. Flow characteristics of pumping equipment.
5. The pump impulses synchronize with the oscillation period of the discharge piping.

It is believed that the distance of the manifold from the pumps, and its location with respect to the pumps is probably the most important factor contributing to the cause of pressure surges. Oscillations originating at the pump travel through the oil stream where they are reflected back to the pump. The reflecting point may be in the manifold, or between the manifold and pump, depending on restrictions or abrupt bends in the discharge piping. The frequency of these pressure waves is governed by the pump strokes. Their time interval (amount of time required to travel from the pump to their reflecting point and return) varies with the length of the discharge line.

Tests indicate that serious disturbances in the pump discharge piping can be minimized by locating the manifold within 100 feet or less from the pumps. Abrupt turns should be avoided in the discharge piping between the pumps and manifold. Restrictions in the piping and dead ends should be avoided in the manifold if possible. Practical operations demonstrate that one pump on a line may give no trouble, however, pumps operated in parallel may produce excessive pressure surges. Oscillations originating at one pump may reflect from the manifold back through the discharge line of another pump. In this course of travel a collision of oscillations or pressure waves originating from different pumps results in sudden pressure rises. When two or more outgoing lines are in use beyond the manifold this condition can be corrected when it is possible to place a single unit on an individual line.

The influence of the pumping equipment on pressure surges depends on the type of pumps in use. The best flow characteristics are found in short-stroke pumps, particularly multiple-plunger single-acting pumps. The poorest flow characteristics are found in long-stroke pumps with fairly high plunger speeds.

Origin of Pressure Surges

The origin of pressure surges in pump discharge piping is analogous to critical speeds in the shaft system of an engine. The engine may operate smoothly at certain speeds, but when a speed is reached where the operating impulses coincide with the natural vibration period of the shaft system, dangerous criticals will be encountered. In a similar manner the disturbances in a discharge line may be at a minimum at certain pump speeds, while at other speeds pressure surges of such intensity are produced to cause serious damage. When this condition occurs the pump impulses have coincided with the natural oscillation period of the discharge-piping system.

As demonstrated in Figures 4 and 5, a test operating four units in parallel at a reduced speed

* Before Pipe Line Section, Oil-World Technical Conference, Houston, Texas, April 24-29, 1939.

[1] The Occurrences and Elimination of Surge or Oscillating Pressures in Discharge Lines from Reciprocating Pumps, by H. Diederichs and W. D. Pomeroy, A.S.M.E. Rochester, New York, May 13 to 16, 1929.

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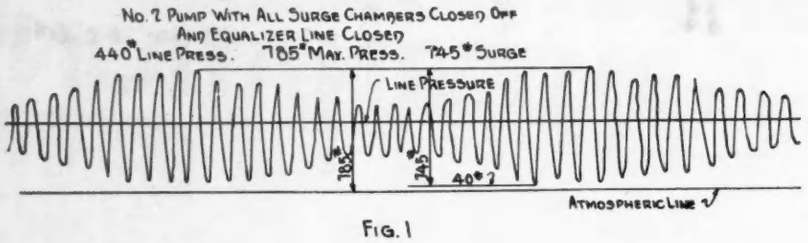


Fig. 1

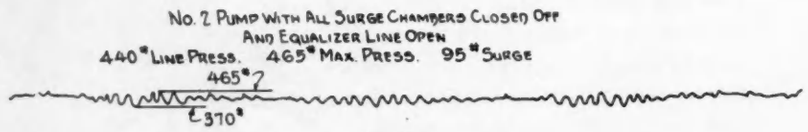


Fig 2

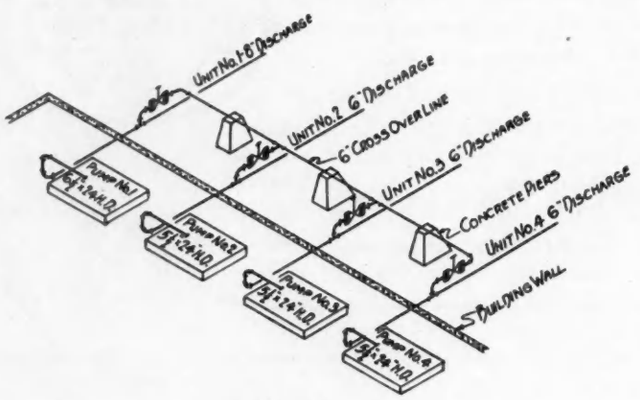


Fig. 3

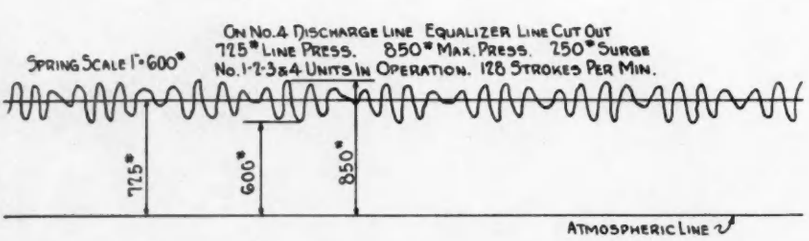

On No. 4 Discharge Line Equalizer Line Cut Out
Spring Scale 1"=600#
725# Line Press. 850# Max. Press. 750# Surge
No. 1-2-3&4 Units In Operation. 128 Strokes Per Min.
725#
600#
850#
Atmospheric Line

Fig. 4

showed only 250 pounds variation from an average pressure of 725 pounds. After taking one unit off the line, speeding up the other three units to obtain the same pumping capacity, the pressure varied from 0 to 1350 pounds. The only change in operating conditions was increasing the speed of the pump and, consequently, the velocities through the discharge piping. A change in frequency of the pump impulses is responsible for this increase in pressure variation to the dangerous point of 1350 pounds. It is noteworthy that in Figure 5 the pressure drops from 1350 pounds to atmospheric or below, which indicated an actual break in the fluid column. The combination of the pressure surges produced by elastic oscillations and the impact of the fluid column when reuniting cause the greatest shocks to pumping equipment, often resulting in failures.

Such devices as air chambers were developed for use on the discharge piping for protection against these shocks; although effective in their application, the possibility of combustible mixtures offers a hazard from explosions. In this connection there is some evidence that combustible temperatures can be developed from the sudden compression of the air and gas mixture by the pressure surges. The author knows from personal experience of one occasion where the top of an air chamber became hot enough to blister the paint. It is believed that this condition resulted from the pressure surges compressing the air in a chamber only partially filled. It is my opinion that the heat was developed so rapidly by sudden compression that it could not be dissipated through the reduced surface of the chamber without developing high temperatures. In addition to this hazard, experience has shown also that there is danger of vapors and crude oil escaping into the building through broken gauge glasses which, in due course of time, fail from fatigue resulting from shock and compression strains.

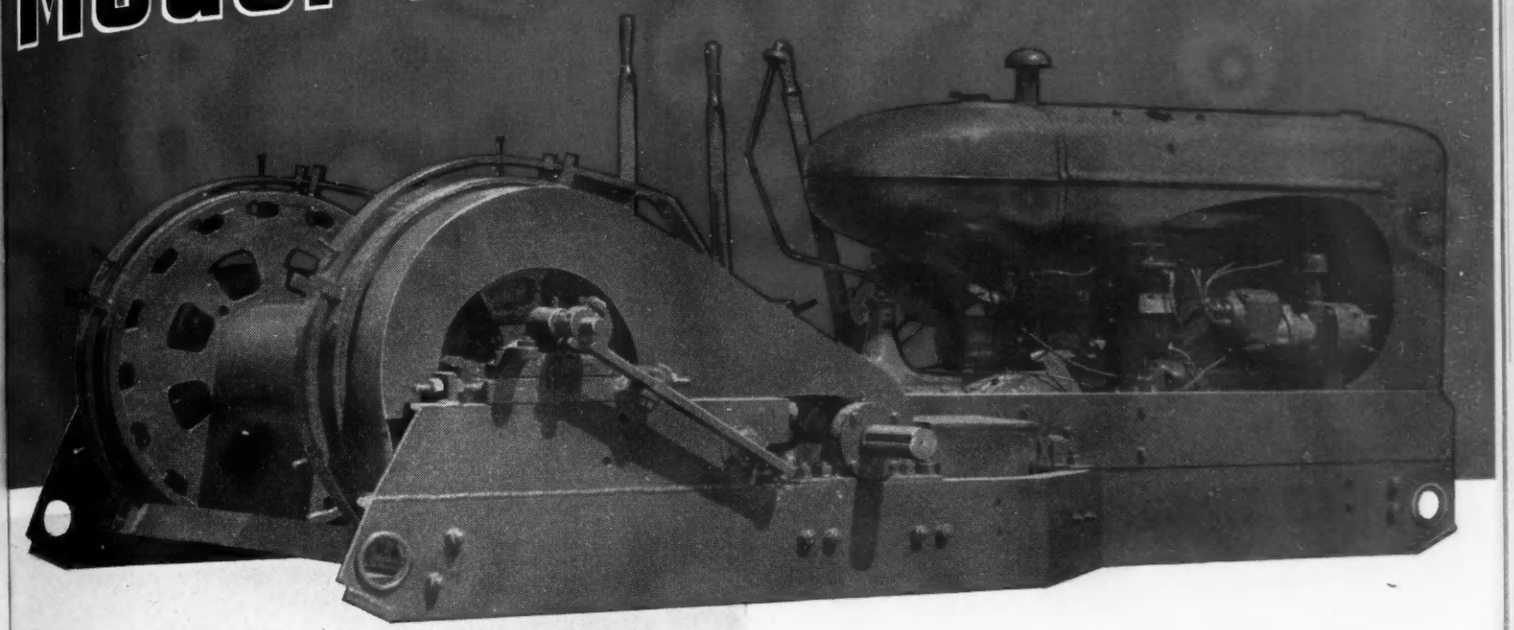
The possible hazards, the inconvenience of charging and the expense of maintaining the air chambers influenced our company in testing out another means which we believed might serve this purpose. The first test was made using a 4-inch line inter-connecting the discharge lines of two 15,000-barrel capacity 24-inch stroke duplex pumps. Although the 4-inch equalizer line had 6 right-angle turns in it, its use reduced the range of pressure variation from 745 pounds to 95 pounds as shown in Figures 1 and 2.

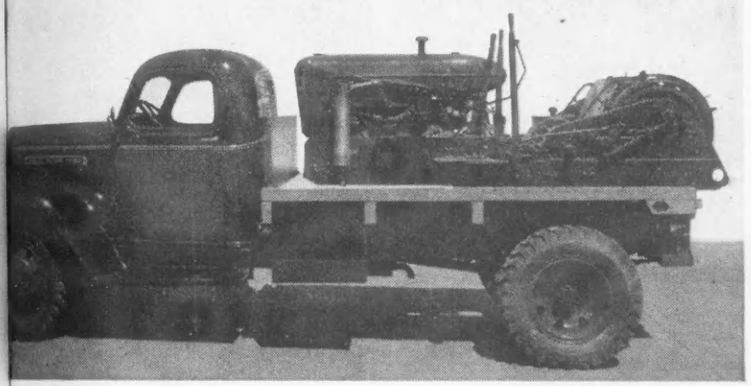
Arresting Pressure Surges

These results proved the practicability of the equalizer line for arresting pressure surges to safe operating limits and justified further tests with a larger line. A further test was made with a 6-inch line inter-connecting the discharge lines of one 20,000-barrel and three 12,000-barrel daily capacity 24-inch stroke duplex pumps, as shown in Figure 3. An oil engine indicator was used to obtain the pressure diagrams. Although the entire range of operating conditions and unit combinations were tested, only the principal results and most interesting information are shown in Figures 5 and 6. Without the equalizer line in service a surge as shown in Figure 5 having a

IT'S NEW!

Allis-Chalmers Model W SKID WINCH





Here's the practical answer to the demand for a small type skid winch, yet one that will easily handle 3,500 feet of 2" tubing. One that can quickly be mounted on a very small truck. Priced so that the operator, of even the smallest lease in shallow production, can enjoy the economies of A-C high speed pulling equipment.

The Model W is the only skid winch of its size, having eight line speeds and equipped with Cooper, patented, air cooled brakes. It is powered by a slow speed tractor type engine, having removable cylinder sleeves, oil bath air cleaner, oil filter, high tension magneto, and dry disc clutch.

SPECIFICATIONS

ALLIS-CHALMERS MODEL W SKID WINCH

Maximum Line Pull	**20,666 lbs.**
Line Capacity, 1/2"	**5,660 ft.**
Line Capacity, 7/8"	**1,840 ft.**
Line Speeds (8)	**59' to 974' p. m.**
Drum Mountings	**Ball Bearing**
Engine	**4 Cylinder**
Cu. In. Displacement	**201**
Torque	**128 ft. lbs.**
Area Main Bearings	**41.2 sq. in.**
Transmission	**Industrial Type**
Fuel	**Gas, gasoline**
Lubrication	**Force feed**
Cooling	**High pressure pump**

This Model W is also available as a high speed winch tractor. Road speed 15 m.p.h. Four speed transmission—four forward, one reverse. Road clearance 20½".

ED E. Cooper

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BRANCH—9619 South Main St. - - - - - - - - Los Angeles
BRANCH—322 East Tyler St. - - - - - - - - - - Longview

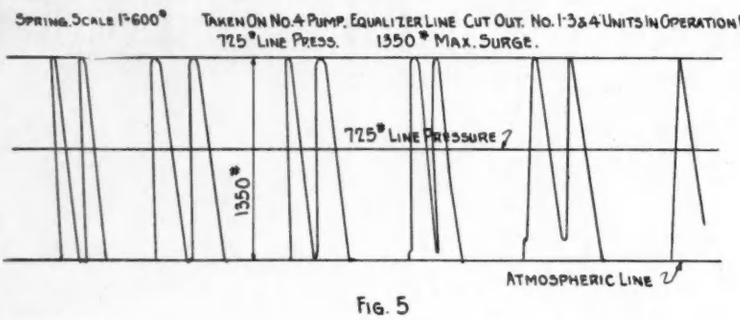
SPRING SCALE 1"=600#
TAKEN ON NO. 4 PUMP. EQUALIZER LINE CUT OUT. NO. 1-3 & 4 UNITS IN OPERATION MAX. SPEED
725# LINE PRESS. 1350# MAX. SURGE.
725# LINE PRESSURE
1350#
ATMOSPHERIC LINE

FIG. 5

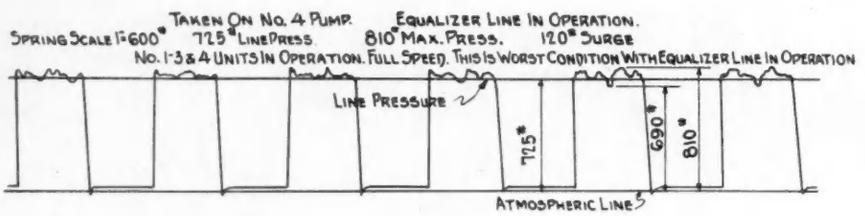
SPRING SCALE 1"=600#
TAKEN ON NO. 4 PUMP. EQUALIZER LINE IN OPERATION.
725# LINE PRESS. 810# MAX. PRESS. 120# SURGE
NO. 1-3 & 4 UNITS IN OPERATION. FULL SPEED. THIS IS WORST CONDITION WITH EQUALIZER LINE IN OPERATION
LINE PRESSURE
725#
690#
810#
ATMOSPHERIC LINE

FIG. 6

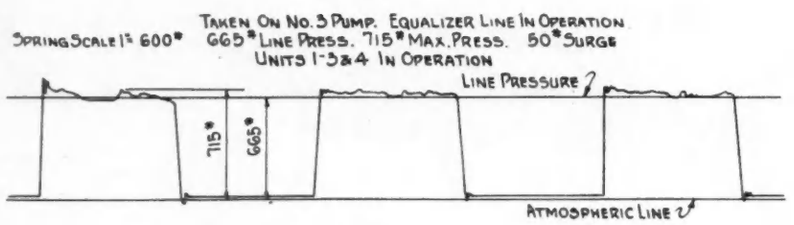
SPRING SCALE 1"=600#
TAKEN ON NO. 3 PUMP. EQUALIZER LINE IN OPERATION
665# LINE PRESS. 715# MAX. PRESS. 50# SURGE
UNITS 1-3 & 4 IN OPERATION
LINE PRESSURE
715#
665#
ATMOSPHERIC LINE

FIG. 7

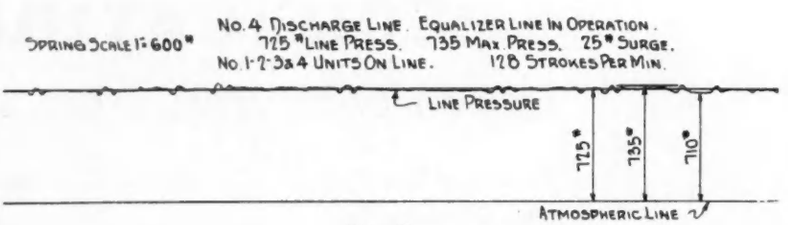
SPRING SCALE 1"=600#
NO. 4 DISCHARGE LINE. EQUALIZER LINE IN OPERATION.
725# LINE PRESS. 735 MAX. PRESS. 25# SURGE.
NO. 1-2-3 & 4 UNITS ON LINE. 128 STROKES PER MIN.
LINE PRESSURE
725#
735#
710#
ATMOSPHERIC LINE

FIG. 8

range of 1350 pounds was obtained by the use of the indicator on one of the pump cylinders connected between the suction and discharge valves. For each stroke of the plunger two impulses were recorded. When making this test two gaskets were blown out of discharge line flanges, one before and one after the normal 725-pound line pressure was reached.

On account of excessive surges it was decided that it would be too dangerous to take additional diagrams. The valves on the equalizer line were opened which reduced the surge from 1350 to 120 pounds. This information shown in Figure 6 represents the maximum surge with the equalizer line in use for any operating condition. Continuing the test with the same operating conditions except slowed down to 665 pounds line pressure resulted in a maximum surge of 50 pounds as shown in Figure 7. Figure 8 was taken on the discharge line of one of the pumps about 8 feet from the pump, indicating better conditions in the discharge piping between pumps and manifold than at the pumps.

It is believed that this crossover or equalizer line accomplishes its results in two different ways:

1. It permits averaging the flow variation from the discharge line of one pump to that of another.
2. Reduces the intensity of pressure waves due to dampening or diffusing effect by splitting the discharge stream.

Conclusion

Based on the information obtained from these tests, three permanent installations have been made, one on a three-unit station and two on four-unit stations. The results of these installations under normal operating conditions are even better than those obtained on the test, 40 pounds being the maximum surge recorded.

The advantages of such an arrangement over the use of air chambers or alleviators, are:

(a) Greater safety. No high pressure air required with its ever-present explosion hazard.

(b) Simplicity of operation. No attention required after opening valve into crossover line when closing pump by-pass.

(c) Low maintenance cost.

(d) Less investment required than to equip each pump with air chamber or alleviator.

The disadvantages:

(a) All units cannot be connected at stations where more than one grade of crude oil is pumped.

(b) Not as efficient in cushioning surges as air chambers. however, pressure variations are reduced to within safe operating limits.

This method is especially desirable for use with existing installations where problems are encountered with pressure surges. Where new stations or new manifolds are being planned, the manifolds should be located close enough to the pumps to place the natural oscillation period of the discharge lines high enough to prevent the possibility of synchronizing with the pump impulses.

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

E. L. Decker organizes Houston chapter of Nomads

Initial steps for the organization of the Houston chapter of Nomads, an organization composed of men who have made trips abroad in the interest of oil-field equipment and supplies, were taken to a luncheon at the Rice hotel on April 27.

E. L. Decker, Martin-Decker Corporation, Long Beach, president of the Los Angeles chapter, outlined plans for the functioning of the organization, explaining it contemplated a get-togethor of qualified members once a month for a combination educational and social function. The purpose of the Nomads, Decker said, is to promote a better understanding of the problems of the members and thus make the way easier for "all the ambassadors of foreign commerce."

Rex Hamaker, vice president of Reed Roller Bit Company, was selected temporary chairman of the young chapter and W. V. Gross, foreign editor of THE OIL WEEKLY was appointed temporary secretary.

Ted Sutter, Baker Oil Tools, Huntington Park, California, was appointed chairman of a committee to draw up a set of by-laws and a constitution, both of which presumably will be largely patterned after those of the Los Angeles chapter. Sutter will be assisted in that work by Frank Champion of Byron Jackson, Houston division, and C. A. McCollum, National Supply Company, Houston.

Brick Elliott, with Byron Jackson also at Houston, was named chairman of a committee to nominate a slate of charter members for the Nomads. These will be voted on at the next meeting of the society.

Alberta crude prices now under government control

Despite strong protests by operators, the Alberta legislature last week gave final approval to a bill providing for government control of prices of crude and all petroleum products within this west Canadian province. The new legislation gives the lieutenant-governor-in-council authority to give the power of law to any recommendations of an investigating commission under the public inquiries act, and prices of crude or any petroleum product can be changed from time to time throughout the province or in specific localities.

Lines Made Utilities

Other legislation approved before adjournment of the law making body last week places pipe lines now owned and operated by Royalite Oil Company, Limited, between the Turner Valley field and Calgary under jurisdiction of the public utility commission with respect to rates and practices.

As the price fixing act is merely an enabling measure, operators hope to be able to forestall any orders that may be issued under it that would be likely to retard development in Turner Valley or other Alberta oil areas.

Text of the protest, adopted by directors of the Alberta Petroleum Association and forwarded to Hon. N. E. Tanner, provincial minister of lands and mines; Hon. E. C. Manning, provicial secretary and minister of trade and industry, and Premier William Aberhart, follows:

Protest Bill

"The board of directors consider that the introduction of this bill without reference to, or discussion with representatives of the association, is not in the interests of the oil industry, and protest against this or any other bills being prepared and presented without it first being referred to the interests directly concerned.

"Any attempt to fix field prices for crude, or indication of such action, will inevitably result in retarding future development and subsequent revenue for the government, and the association asks how the government could expect capital to be invested under such conditions to bring about the much desired increase in potential production and reserves."

WATCHING PERU

J. E. Brantly of Los Angeles, president of Drilling & Exploration Company, in charge of operations on the preliminary development program of Compania de Petroleo Ganso Azul, Limitada, an organization which recently discovered oil on a 90,000-acre concession in Peru. Born in Macon, Georgia, and educated at the University of Alabama and at the Colorado School of Mines, Brantly subsequently taught geology in the former institution and became the inventor and developer of various machines and instruments used on rotary drilling rigs. He is the author of several volumes on geology, "Rotary Drilling Handbook," and numerous technical papers on geology and rotary drilling.

Richberg to confer with Najera on expropriation

Reports from Washington, April 27, were that negotiations between Donald Richberg, representative of American and British oil companies whose properties, valued at about $400,000,000, were expropriated March 18, 1938, and Francisco Castillo Najera, Mexican ambassador to the United States, representing the Mexican government, were scheduled to be resumed soon in San Antonio, Texas.

It was said Richberg had received new instructions from the companies as to how far they would go in efforts to reach an agreement with Mexico. The proposals of President Cardenas for plans for resumption of operation of the oil business in Mexico by the companies were not satisfactory to them.

Najera has served as interpreter at previous conferences between Richberg and Cardenas.

Cuban wildcats drilling

Reports from Havana, Cuba, are that Shell Oil Company is drilling slightly below 4500 feet on a wildcat 15 miles out of Havana and that Atlantic Oil Producing Company's wildcat in Matanzas province has attained a depth of around 3500 feet.

MEN IN THE INDUSTRY'S NEWS

P. R. APPLEGATE, New York, was re-elected president of Northern Pipe Line Company at a stockholders and directors meeting held in Oil City, Pennsylvania, last week. Other officers named are J. A. Bartlett, vice president and general manager; J. H. Peper, vice president and and chief engineer; J. R. Fast, secretary, and C. H. Cleaver, D. S. Bushnell and J. P. Blackford, directors.

W. H. BLACK, president of Black Oil Company, and his wife, Mrs. Alicia Black, were critically injured in an automobile accident near Tulsa last week. Black is currently active in the Illinois basin area and has his headquarters in Mattoon.

E. B. SHAWVER, Wichita operator and president of Kansas Independent Oil & Gas Association, was in Tucson, Arizona, last week.

W. B. CURREY, former district manager for United Gas Corporation at Marshall, Texas, has been named superintendent of the company's East Texas division with headquarters in Beaumont. A. D. Kerr, former operating manager, has been named district manager, and H. B. Carrol, former operating manager at Houston, has been made general superintendent. Kerr and Carrol are located at Marshall.

R. RANNE, San Antonio, Texas, was in Evansville last week while looking over operations in Indiana, Illinois and Western Kentucky.

JAMES B. TEMPLETON, consulting geologist who has worked in western fields and in South America, has joined Bob Garland, independent operator and head of the Arab Petroleum Corporation.

I. A. LANGE, of Pryor & Lockhart, Inc., Wichita; C. A. Elmborg, El Dorado Refining Company, Wichita, and John Ogletree, Magnolia Petroleum Company, Wichita, have been named to the directorate of the Petroleum Accountants Society of Wichita. They succeed Paul Bishop, Lauck & Moncrief; R. M. Pritchard, T. M. Deal Oil & Gas Company, and L. M. Woodward, Derby Oil Company, whose terms have expired.

W. W. DAMRON, operator of Owensboro, Kentucky, was at the Mayo Clinic at Rochester, Minnesota, last week for treatment.

H. H. CONLEY, Helen J. Conley, G. W. Youngblood and Lillie C. Youngblood have organized Julia Oil Company as an Oklahoma corporation. Headquarters have been established in Oklahoma City.

ROBERT B. BOSSLER, engineer for Brundred Oil Corporation, discussed oil well shooting at a producer forum in Oil City last week conducted under the auspices of the Pennsylvania Grade Crude Oil Association. H. M. Rugg, automotive engineer for the association, was announced as the speaker for the next meeting, to be held April 4. He will discuss "Diesel Engines."

D. L. HYATT, Carter Oil Company geologist, has been transferred from Ardmore to Seminole, Oklahoma.

R. W. BLACKBURN, engineer with Continental Oil Company, has been transferred from Ponca City, Oklahoma, to Opelousas, Louisiana.

W. L. McCLOY, JR., engineer with Shell Oil Company, has been moved from Wichita Falls to Tulsa.

DORSEY HAGER, consulting geologist of Centralia, Illinois, discussed "Oil Possibilities in Illinois" before a joint meeting of the Illinois Society of Engineers, American Society of Civil Engineers and the Springfield Engineers Club at Springfield, Illinois, last week.

LESLIE STEGALL, Deep Rock Oil Corporation, has moved from Lafayette, Louisiana, to Houston, where the company has opened offices and plans to move its office from Tyler, Texas.

JAMES P. FORAKER, scout for the Skelly Oil Company in southeastern New Mexico, has been transferred to Shawnee for duty in central Oklahoma, and has been succeeded by Hilton Kaderli, who was in the company's land department at Midland, Texas.

DR. FREDERICK H. LAHEE, chief geologist for Sun Oil Company, Dallas, departed last mid-week on a business mission to Washington, D.C.

L. K. EASTMAN, land man for Phillips Petroleum Company in North Texas, has been transferred from Wichita Falls to Oklahoma City, and will be succeeded by Jack Rettig.

W. H. BERG, president of Standard Oil Company of California, delivered the address of welcome one day last week to 400 dinner guests at the El Tejon, Bakersfield, where a banquet was held by the company's production department's safety committee. Following his address of welcome, Arthur H. Young, retired president of Industrial Relations Councillors, Inc., J. A. Bowlong, of Southern California, and Max Newton, San Joaquin Valley gave talks on safety.

HARRY KRAMP, sales engineer for Fred E. Cooper, will present a paper entitled "History of Portable Well-Servicing Equipment" at the Society of Automotive Engineers meeting to be held at Norman, Oklahoma, May 12.

J. P. CUSACK, Midland producer and former West Texas land man for Skelly Oil Company, was injured April 21 in an auto accident near Lovington, New Mexico. He was taken by plane to a hospital at Temple, Texas, where he is reported recovering from a leg fracture and head injuries.

JOHN F. PURDUM, formerly an engineer with Stanolind Oil Gas Company and Muskogee Iron Works, has opened offices in Tulsa as engineering consultant in drilling and production methods as well as equipment and installation design.

CURTIS B. DALL of New York City has organized the Curtis B. Dall Corporation to engage in oil exploratory operations in Texas, and will establish headquarters at Dallas. Dall and associates recently drilled a deep wildcat in North Texas.

P. C. DIXON, of the firm Parker, Foran, Knode and Boatwright, spoke before the Houston Geological Society April 27 on the subject, "Production Methods and Appraisals of Condensate Wells."

VAN DER HEIDEN, fields manager for "Diadema" in Argentina, is convalescing in a Buenos Aires hospital from injuries received in an automobile accident.

DONALD MacKAY, formerly of San Antonio, has opened a consulting geologist office with Maurice Grubb at 601 National Standard Building, Houston.

L. L. AUBERT, general manager of Bankline Oil Company, has been elected president of the California Oil Producers Agency, succeeding L. L. Williamson. Vice presidents include Maurice Machris, J. H. Lewis, Angus Crites and W. L. Adkisson. W. A. Russell is secretary. Rush M. Blodgett was reelected executive vice president and begins his eighth year as manager of the agency.

DIED:

JAMES F. BARBOUR, one of the most colorful characters of the Tampico boom period, died of a heart attack while attending a football game in Mexico City recently. Barbour was superintendent of East Coast Oil Company in Tampico and later was with Agwi Petroleum Company under T. R. Batte. J. E. Shaw, with Compania Mexicana de Gas, S. A., at Monterrey, writes in that "Barbour's early activities below the border were as a fireman and engineer on the Mexican National Railway between Laredo and Mexico City. He lived in Mexico so long that he claimed to have fired the boilers on the Holy Well at Tepeyac. He was a member of all Masonic orders."

R. W. LOWE, 58, for 26 years an executive of Standard Oil Company of Louisiana, until his retirement in November, 1936, died at his home near Shreveport April 25. Interment was in Shreveport.

F. G. VARDIN, 36, Oakland, Louisiana, died April 24 of burns received in an oil well blowout and fire in the Harang field April 23. Two others of the crew that was reworking the well were killed, and two injured.

J. DON COLE, SR., 44, superintendent of the Flour Bluff district of Humble Oil & Refining Company, died April 24 in a Houston hospital. Cole, who had been with the company for 20 years, was making his home in Corpus Christi at the time of his death.

THE WEEK'S NEWS SUMMARIZED

Allowables

Apparently learning a lesson from the confusion that resulted from its tactics in promulgating April allowable, the Texas Railroad Commission has issued a 60-day order, covering the months of May and June, that again will bring the state within the Bureau of Mines estimate of consumer demand. This is expected to have a stabilizing influence on the entire industry. The new Texas order makes some reductions in field allowable, but the reduction is to be acocmplished largely by having 6 production holidays during both of the months, whereas there were only 5 shutdowns during April. The state's allowable output, considering both shutdowns and the output of fields exempt due to water, is expected to average 1,393,077 barrels during May. This is 13,023 barrels less than the bureau's consumer demand estimate. The problem seemed to be attacked in a much more systematic procedure than in the preceding month, and all three members of the commission signed the order.

It was decided last week by the Central Committee of California oil producers that wells in the state that have been shut in for the past five years must demonstrate their ability to produce before they are given an allotment by the oil umpire. Tests of these wells are to be conducted during the next 90 days. The committee last week also voted to table a recommendation for uniform allowables. This action came after protracted discussion.

The Bureau of Mines forecast of market demand in May reflects a decrease of 8800 barrels in comparison with April, and is 3500 barrels less than the actual output in May a year ago. An anticipated decline in crude exports is largely responsible for the change.

Arkansas has set its May allowable at 54,627 barrels, an increase of 1635 barrels over April, and 1727 barrels higher than the Bureau of Mines allocated to the state in its estimate of consumer demand.

Legislation

Hearings on the proposal to make the Connally hot oil act permanent, resulted in pleas for such action and in charges that it was a monopoly tool in the hands of major concerns. Those favoring the measure asserted that it had proven its value by preventing Texas from drowning in its own oil, and that by making it permanent a great stabilizing influence would be obtained. Opposition charged the law gave big companies increased control, and that by artificial limitation of production raised the price of petroleum products.

Although originally scheduled for late this month or early June, hearings on monopoly conditions in the oil industry by the Temporary National Economic Committee now are not expected before late June or early July. The committee's program at present calls for the oil inquiry to be pushed back to provide sufficient time for analysis of the replies to questionnaires sent out recently to oil companies.

Exposition

The successful second Oil-World Exposition at Houston came to a fitting climax on April 28, when members voted the holding of a show every year was too frequent and that Tulsa and Houston should alternate with a show every two years. To move in this direction it was decided the next Houston show would not be until the spring of 1942.

Markets

The markets have become unsettled within the past week, apparently in recognition of the dangerously high crude oil production and refinery runs since the beginning of April.

Although wholesale gasoline prices were firm in the early part of last week, they later became unsteady, and some refiners in the Mid-Continent lowered their quotations ⅛ cent a gallon on some grades.

Both crude oil production and refinery runs have shot up to new peaks for the year in the past two weeks, and meanwhile gasoline was forced into storage.

The gasoline stocks also rose to a new high for this year when they increased to 87,769,000 barrels in the week ended April 22.

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Allowable Picture

Texas adopts 60-day order that provides for six shutdowns per month and allowables below Bureau . . . Less demand seen by Bureau in May forecast.

Texas fixes allowable below Bureau of Mines

The Texas Railroad Commission's action in issuing a 60-day proration order, covering the months of May and June, and in again bringing the state's allowable within the Bureau of Mines estimate of consumer demand was welcomed by the majority of companies. It was felt this action would have a stabilizing influence on the industry in general. The new order was signed by all three members of the commission, in contrast to the multi-orders for April, which Colonel E. O. Thompson did not sign.

The bringing of the state into line with the Bureau of Mines calculation of consumer demand was accomplished by ordering production holidays on six days, whereas there were but 5 such days during April. Fields will be closed on all Sundays, May 7, 14, 21 and 28. They also are to be closed on the first two Saturdays of the month, May 6 and 13. In June, production shutdowns were ordered on June 3, 4, 10, 11, 18 and 25.

Because of water production and similar causes the commission exempt from the shutdowns the following fields: Eckert, Minerva, Rockdale, Somerset, Barbers Hill, Boling, Goose Creek, Hammon Deep, High Island, Hitchcock, Old Hull, New Hull, Lochridge, New Mykawa, Old Ocean, West Columbia, Charamousca, Midway, Corsicana, Currie, Mexia, Powell, Richland, Wortham, Wortham Shallow, Big Lake, McMillan, World, Eaves, Garza, Hendricks, Leck, Shearer, Taylor-Link and Tobarg.

After these deductions were made, the commission estimated that the net allowable production for May would average 1,393,077 barrels daily, or 13,023 barrels less than consumer demand for Texas oil as calculated by the United States Bureau of Mines. The daily average for June will be about 1,402,868 barrels, which is still 3232 barrels below May consumer demand. June consumer demand figures are not yet available.

The commission made adjustments in several fields, which included cuts in several districts. The reductions were caused in most instances by decreased market demand from particular fields, and because fields were unable to produce allowables assigned. In several instances field allowables were increased because of higher market demand. Conroe was raised 4477 barrrels, and increases of 2000 barrels were provided for both Yates and Van.

For the first time in the history of the commission, its director of production, Charles M. Langford, prepared written recommendations which he signed and which were made public at the time the order was issued. These recommendations were likewise signed by each of the three commissioners, indicating that the data was adopted as the basis for the order promulgated.

The recommendations are set out in full below:

"We are confronted with the problem of limiting our production to the indicated market demand. If we are to keep our production in Texas within the demand, obviously reductions must be made in many fields.

"There are numerous fields that cannot be further reduced since they are already at or below marginal. There are also fields where the presence of water or other conditions demand the operation seven days a week in order to prevent physical waste, as well as fields where local refinery demand and special market outlets must be considered on the basis of testimony which has been presented to the commission at various hearings.

"We have gone over the facts of each and every individual field and have endeavored to arrive at a fair and equitable allocation of the allowable for the various fields and herewith submit the results arrived at:

Present Allowable	1,720,666
Reduction due to a check of EB reports and lower market demand for several fields	21,331
Net Allowable	1,699,335

"Since May has 31 days, in our opinion it is necessary that we restrict the number of producing days to the same as that allowed in April; namely, 25 days. It would be necessary, therefore, to restrict 4 Sundays and 2 Saturdays. Our calculations on this basis are as follows:

25 Days each 1,699,335	42,483,375
6 Days Exempt Oil	702,000
Total Monthly Allowable	43,185,375
Daily Average Allowable	1,393,077

"Should we restrict Sundays only and allow 27 days production in May, the allowable would be as follows:

27 Days each 1,699,335	45,882,045
4 Days Exempt Oil	468,000
Total Monthly Allowable	46,350,045
Daily Average Allowable	1,495,163
Bureau of Mines Estimate for the Month of May	1,406,100
Texas Over Bureau of Mines	89,063

"Since 4 Sunday shutdowns will result in an allowable of approximately 89,000 barrels over the Bureau of Mines estimate for May and since there are many fields which cannot be reduced without causing physical waste, it seems that the 6-day shutdown, resulting in 25 days production (same number of days as allowed during April), would provide a solution.

Bureau of Mines	1,406,100
Average Daily Allowable with 6 Days Shutdowns	1,393,077
Texas Under Bureau of Mines	13,023

"The average monthly creep-up is approximately 25,000 barrels due to new wells and retests.

"The following figures are offered for your consideration should you decide to put into effect a 60-day order at this time:

May Allowable	1,699,335
Creep-up During May (Approx.)	25,000
June 1st Allowable	1,724,335

With 5 days shutdown in June (4 Sundays and 1 Saturday):

25 Days each 1,724,335	43,108,375
5 Days Exempt Oil	585,000
Total Monthly Allowable	43,693,375
Daily Average Allowable	1,456,446

With 6 days shutdown in June (4 Sundays and 2 Saturdays):

24 Days each 1,724,335	41,384,040
6 Days Exempt Oil	702,000
Total Monthly Allowable	42,086,040
Daily Average Allowable	1,402,868

"On the basis of 6 shutdown days in June, the following figures are set forth to show what would be the approximate result of allowable operations during the month:

Basic Allowable for June	1,724,335
Creep-up During June	25,000
	1,749,335
Daily Allowable End of June	1,422,868
Approx. Daily Average Allowable Including Creep-up for June	1,412,868

"The foregoing is a result of careful

Texas Allowable Order

Effective May 1, 1939

DISTRICT	Allowable 4-1-39	Allowable 4-14-39	Allowable 5-1-39	Increase	Decrease
1 Southwest Texas	39,554	40,445	38,434	.....	2,011
2 Southwest Texas	66,484	67,220	64,312	.....	2,908
3 Gulf Coast	256,899	260,021	261,475	1,454	.....
4 Southwest Texas	193,920	196,670	188,918	.....	7,752
5 East Central Texas	29,876	30,085	30,574	489	.....
6 East Central Texas	91,090	91,517	82,148	.....	9,369
6 East Texas Field	522,339	522,111	522,450	339	.....
7-B West Central Texas	36,781	38,054	36,845	.....	1,209
7-C West Central Texas	30,048	30,511	27,525	.....	2,986
8 West Texas	227,166	237,706	240,328	2,622	.....
9 North Texas	115,243	117,134	117,134	.....	.....
10 Panhandle	88,996	89,192	89,192	.....	.....
	1,698,396	1,720,666	1,699,335	.....	.....

Bureau of Mines Estimate for May, 1939	1,406,100
Daily Average Allowable—with Shutdowns	1,393,077
Texas Under Bureau of Mines Estimate	13,023

study as to such reductions that can be made without causing physical waste and still keep the production for May and June within the market demand as estimated by the Bureau of Mines."

Whether the commission can continue to work together is unknown; however, with this beginning it is now possible for concerted effort on all important matters, and it appears that the attitude of the commission is reflected by the following telegram which Commissioner Ernest Thompson forwarded to Charles F. Roeser shortly before the order was announced.

"Your press statement is most timely. You are absolutely correct in warning the oil states regulatory authorities against the repetition of the error of over-production of oil which was made in 1937. We are just now getting over it. The State of Texas is positively going to stay within the market demand and I believe all of the oil compact states are going to keep their production within Bureau of Mines estimate. Louisiana has her production in line and California is curtailing sharply and I feel that we will go into the consuming season in good shape. We must avoid the production of more oil than can be sold."

At the last statewide proration hearing Roeser had insisted that the commission get together in preparing the next order, and that all three of them sign the document. On the day preceding the announcement of the new order, he had issued a statement from Fort Worth, declaring that the industry was moving into a position similar to that it occupied in 1937, when overproduction resulted in a vast increase in storage above ground.

In its order the commission made changes in district allowables as indicated by the accompanying table.

Bureau sees smaller demand for May

Market demand for petroleum products in May will require an average daily production of crude oil of 3,425,200 barrels, a decrease of 8800 barrels from the estimate for April and 3500 barrels less than actual output in May of last year, it was forecast by the Bureau of Mines April 22.

An anticipated decline in crude exports, the bureau predicted, will make runs to stills during the month 3,260,600 barrels a day, almost 60,000 barrels higher than actual runs in May, 1938.

"Daily average crude-oil production and runs to stills during the four weeks March 4 to April 1 were 3,396,000 and 3,203,000 barrels, respectively," the bureau commented in discussing the current situation. "During this period total crude-oil stocks increased 2,737,000 barrels. Foreign stocks, however, declined 368,000 barrels, making the increase in domestic crude-oil stocks 3,105,000 barrels, or 111,000 barrels daily. This figure subtracted from the production leaves 3,285,000 barrels as the apparent daily demand for domestic crude during March, compared with the bureau's estimate of 3,340,000 barrels. Weather conditions were generally unfavorable for motor travel, and export demands were below expectations."

Exports to Be Less

The report pointed out that although the foreign situation lends uncertainty to the future, little change is anticipated in the general trend of demand, and the May figure is set at 48,000,000 barrels, 7 percent greater than domestic demand in the same month last year. Motor-fuel exports, based upon forecasts of exporters, are 4,300,000 barrels, or 276,000 barrels less than the actual last May.

A decrease of 3,000,000 barrels in finished gasoline stocks during May is anticipated by the bureau. Stocks of finished and unfinished gasoline on February 28 were 85,491,000 barrels and, according to figures of the American Petroleum Institute, increased 2,233,000 barrels during the following month, reaching 87,700,000 barrels on March 31.

Refinery Runs by Districts

Benzol and direct sales of natural gasoline are estimated at 1,000,000 barrels, making refinery production 48,300,000 barrels, which the bureau distributed among the various districts as follows:

East Coast, 6,310,000 barrels; Appalachian, 1,730,000 barrels; Indiana-Illinois, 8,830,000 barrels; Oklahoma, 2,840,000 barrels; Kansas-Missouri, 2,360,000 barrels; Texas inland, 3,440,000 barrels; Texas Gulf Coast, 12,610,000 barrels; Louisiana Gulf Coast, 1,462,000 barrels; North Louisiana-Arkansas, 940,000 barrels; Rocky Mountain, 1,260,000 barrels; and California, 6,520,000 barrels.

With natural-gasoline consumption at refineries estimated as 6 percent of the total production or 2,900,0000 barrels, and a yield of straight-run and cracked gasoline of 44.9 percent, the bureau calculated that the production of 45,400,000 barrels will require crude runs of 101,080,000 barrels, or 3,260,000 barrels daily. Foreign crude runs are estimated at 2,100,000 barrels.

Reports from exporters indicate that crude oil exports for the month will be considerably under May, 1938, the highest month last year, and that shipments will approximate 5,600,000 barrels, compared with 7,798,000 barrels. The estimate for fuel and losses is 1,600,000 barrels.

The total demand for domestic crude for the month, as indicated by the estimates, is 106,180,000 barrels, or 3,425,200 barrels daily, which the bureau allocated among the producing states, is shown in the accompanying table.

Bureau of Mines Estimate of Crude Oil Production Demand, May, 1939

STATE	Forecast May, 1939	Forecast April, 1939	Actual Demand May, 1938
Texas	1,406,100	1,412,700	1,337,000
California	582,600	592,000	670,000
Oklahoma	455,800	473,300	552,000
Louisiana	261,600	262,000	268,000
Illinois	159,700	149,300	44,000
Kansas	152,600	152,700	178,000
New Mexico	115,500	115,300	103,000
Wyoming	64,200	50,000	67,000
Arkansas	52,900	53,300	48,000
Michigan	50,000	48,300	56,000
Pennsylvania	48,300	48,000	45,000
Montana	16,100	15,300	14,000
Kentucky	15,800	17,700	11,000
New York	15,100	15,100	16,000
Ohio	10,500	10,900	7,000
West Virginia	10,300	10,100	7,000
Colorado	5,200	5,000	4,000
Indiana	2,900	3,000	2,000
	3,425,200	3,434,000	3,429,000

Arkansas May allowable set at 54,627 barrels daily

The Arkansas Oil and Gas Commission at a session on April 25 set the Arkansas May oil allowable at 54,627 barrels daily, an increase of 1635 barrels over April. The May allowable was divided between settled and controlled fields as follows: settled fields, 24,000 barrels; controlled fields, 30,627 barrels.

Controlled fields' allowables for May follow: Atlanta, 200 barrels (one well), unchanged; Buckner, 1925 barrels, up 175 barrels; Magnolia, 6200 barrels, up 1800 barrels; Miller County (Rodessa), 3861 barrels, down 420 barrels; Schuler (Jones sand-Lower Marine) 15,000 barrels, unchanged; Schuler (Reynolds-Permian lime), 2400 barrels, up 300 barrels; and Village, 941 barrels, up 179 barrels.

Chairman O. C. Bailey of the commission urged operators to adopt a repressuring program for the Jones sand (Lower Marine) at Schuler, indicating that unless steps are taken immediately to boost gas pressures in that horizon that a huge loss in ultimate recovery there impends.

California tables uniform allowable

Wells that have been off production for the past five years in numerous California oil fields will have to demonstrate their ability to produce oil before they are to be awarded with an allotment by the oil umpire, was the decision reached at last week's regular meeting of the Central Committee of California Oil Producers.

J. B. Pemberton's personnel was authorized to start the check May 1, and this will be conducted for the next 90 days to enable these wells to perform to the satisfaction of the committee. L. L. Aubert, chairman of the Allocation Committee, offered this measure in the form of a resolution which was passed. However, an effort was made to limit the period to 60 days, and to check the wells that have only been shut in for one year.

Aubert explained that many wells in the state must qualify themselves in order to obtain an allotment under the present set up. It was made clear that no particular section of the state was being discriminated against, and that shut in wells affected practically every field in California. Aubert said wells that show their ability to produce will be given an allotment strictly calculated upon their potential.

The central committee, after a protracted discussion of the proposed uniform allowable for all oil wells in the state, voted to table the recomendation to enable further study of the proposition. Delay of passage of this important measure was said to be due to lack of understanding, and to give a number of the chairmen more time in which to contact the respective members of the various field committees, although many reported to Lawrence Vander Leck, chairman of the Central Committee, that in most cases members of the field committees voted favorably and urged adoption of the uniform well allowable schedule.

Application of the formula limits the production of any well in the state to 250 barrels daily, while a well of average depth (average depth of all wells in California considered to be 3000 feet) would be permitted to produce a minimum allotment of

15 barrels daily without taking curtailment. The proposed formula would give the state a daily production of 587,000 barrels, using the 259 barrels daily maximum allotment figures for larger wells. It would exempt from curtailment all wells 10,000 feet deep with potential output of 50 barrels daily or less, and wells with potential output of 6.7 barrels daily not more than 1000 feet deep. Average depth wells (3000 feet) with potential output of 935 barrels daily would be assigned the maximum allotment of 250 barrels daily and all wells with potential in excess of this amount would get no more than 250 barrels daily. This would permit some wells in the state capable of producing 25,000 barrels daily, only 1 percent of this total for their allowable. At least 7850 wells in California would be exempt from curtailment under the plan, since their potential is less than 6.7 barrels daily and their combined potential only 52,825 barrels daily.

Failing in adoption of the uniform well proposal, the central committee also deferred action on the new quota for May, which had been previously recommended by Aubert. The allocation committee asked the central committee to approve a figure of 575,000 barrels, with a tolerance of 1000 barrels daily for new wells for the month of May. However, several members said if the uniform allowable proposal was accredited, it would increase the state's crude production, and urged that more time be given over to study of it. Vander Leck announced that the central committee would meet May 4, at 2 P.M. to consider again the uniform allowable and to set the May quota.

The central committee also passed unanimously a resolution submitted by Ross McCollum, chairman of the compliance committee, whose resolution follows:

Resolved: First that the pipe line companies, through their own personnel, contact producers with whom they have oil purchase contracts and urge compliance with the curtailment program of the central committee.

Second: That the compliance committee establish suitable contact with all refiners in an effort to persuade them to secure the cooperation of the producers from whom they purchase oil.

Third: That each field committee make serious efforts to secure compliance with the curtailment program of the central committee and that the chairman of field committee report to the compliance committee operators with whom they may be having difficulty in obtaining curtailment.

This resolution was signed by Ross McCollum, J. H. Sargent, E. D. Hardison, Smil Kluth and C. G. Williams.

Louisiana May allowable gives South larger share

The Louisiana Conservation Commission last week set the May allowable for Louisiana at 263,634 barrels, of which 62,629 was allocated to North Louisiana fields and 201,005 barrels to South Louisiana. This represents an increase for the state of 5714 barrels over April but is a drop of 1521 barrels for North Louisiana and a hike of 7235 barrels for South Louisiana.

In North Louisiana, Shreveport was given 5029 barrels daily for May; Cotton Valley, 7600 of which 3600 is allocated to the Lower Marine (Bodcaw) wells and 4000 to Holloway (Travis Peak) wells, the latter being reduced 1000 barrels from April; Lisbon, 4000 barrels, unchanged; Rodessa, 28,000 barrels, unchanged; and other North Louisiana fields, 18,000 barrels, reduced 2000 barrels.

Cotton Valley producer, buyer indicted for overproducing

The Webster Parish grand jury called into special session to investigate alleged overproduction of oil and gas in the Cotton Valley field, last week returned 12 true bills indicting two companies, Longwood Oil & Gas Company and Premier Refining Company.

Each company was named in six true bills. Longwood Oil & Gas Company was charged with violation of the state's proration allowable at its Hope A-1 and Hope A-2 producers in Cotton Valley, during January, February and March, 1939. Premier Refining Company was indicted for purchase of the production from the two wells during these three months.

It is reported the companies' defense will be that they had a special allowable order to produce in excess of the regular field allowable.

Court considering Texas proration suit

A three-judge federal court at Houston, April 28, was considering evidence in the suit of J. S. Abercrombie and Harrison Oil Company against the Texas Railroad Commission in connection with oil production allowables in several Gulf Coast fields.

Depositions had been taken in Houston earlier in the week from plaintiffs, and in Austin from the defendants.

The suit was filed after the railroad commission on March 31 ordered reductions of allowables of the coastal fields, and plaintiffs obtained from federal district court a temporary restraining order granting immunity from the new orders. The three-judge court last week was hearing evidence on which to decide whether to grant an injunction in the case.

The court was composed of Federal Circuit Judge Edwin R. Holmes of Yazoo City, Mississippi, and Federal District Judges T. M. Kennerly of Houston and Robert J. McMillan of San Antonio.

Oil wells involved in the suit are in the Old Ocean, Manvel, Markham, Pierce Junction, and Placedo fields.

Harrison and Abercrombie exempt from shut-downs

The Texas Railroad Commission has issued a supplementary order exempting all Harrison and Abercrombie wells from the May and June shut-downs. This action was taken in compliance with a Federal Court injunction obtained by the company early in April. The properties are located in Pierce Junction and other Gulf Coast fields.

Texas proration laws extended for two years

The Texas legislature has passed and sent to the governor a bill extending proration laws for two years more. No changes in the statutes are provided by this bill.

Several attempts were made to amend the measure, both in the House and in the Senate. An effort was made to require refineries to use Texas oil, and Senator A. M. Akin tried to delay the bill to determine why imports approximated half the oil exported from Texas.

Illinois committee ends hearings in oil field areas

Conflicting testimony as to the effect of proration on oil field development went into the record of the special committee of the Illinois legislature, which closed its hearing in the oil territory at Mattoon on April 28. Should further testimony be heard, the committee will be in the state capitol.

C. F. Buchner, vice president W. C. McBride, Inc., told the committee that the state needed conservation regulations as a means of preventing underground waste and further to prevent economic waste. At the request of the committee he defined conservation as the method of getting the largest possible recovery per acre, plus efficient use of oil after recovery. He said he favored creation of a state commission to determine proper output of wells.

James Braden, Centralia producer, said he had been in the business only a short time and thought it wise for those not versed in production to listen to the advice of major concerns and independents of long experience in production.

A. R. Thompson, Mattoon, owner of royalty in several Illinois fields, recommended legislation to assure royalty owners knowing the output of wells and said installation of meters would help. He recommended a gross production tax in lieu of other taxes, with proceeds to be divided between the state and counties in which oil is produced. He further recommended ratable taking, regulation of well spacing and a statute to make common carriers of pipe lines. George M. Pfau, Texarkana, Texas, told the committee he was interested in moving an East Texas refining plant to Illinois and that passage of such law would deter removal of the plant. He mentioned other plants, which he said would be moved if proration is not adopted.

C. C. Cummings, Vandalia, producer at Loudon, favored a proration law, with a minimum output per well provision, as a means of protecting investments already made.

Arthur J. Ruether, St. Louis, Shell Petroleum Corporation, came before the committee to deny statements at a previous hearing to the effect that he had said that Illinois would have a proration law whether independent producers wanted it or not.

Crown Central-C.I.O. conflict continues

Latest development in Crown Central Petroleum Corporation's clash with C.I.O. was the reported mauling of two company employees on April 25 as they left a Houston meeting of the Employees Federation, a company union. The attack, which was made with fists and clubs, severely injured both men, sending one of them to the hospital. The victims were forced to a stop on the Houston-Pasadena Highway by 15 men, allegedly C.I.O. members, who inflicted the beatings in an attempt to coerce the company unionists into C.I.O. ranks.

Oil at the Capitols

Charges of monopoly are injected into hearings on Connally act . . . Economic committee's monopoly hearings postponed until late June or early July.

Hearings on bill to make Connally act permanent

Alleged monopoly in the oil industry last week came under the scrutiny of a House Interstate and Foreign Commerce subcommittee at hearings on the Connally bill to make the "hot" oil act permanent legislation.

Fortified by the unqualified support of Secretary of the Interior Harold L. Ickes, proponents of the bill began their testimony before the subcommittee April 26, only to be faced almost immediately by strong opposition based on allegations that the legislation aims to stabilize prices and strengthen the hold of the integrated companies.

At the outset of the hearings, Representative William P. Cole, Jr., of Maryland, chairman of the subcommittee, put into the record a letter from Secretary Ickes declaring that the time had come to make the law permanent in order to give to the producing states an assurance of continued cooperation by the Federal Government.

"The Connally law is legislation of proven value," the secretary wrote. "It performs a basic function in the prevention of the movement of contraband oil in interstate and foreign commerce and should be considered as fundamental in any broader program of oil conservation in which the Federal Government may participate.

"In view of the fact that the producing state with or considering oil conservation laws produce about 96 percent of the petroleum of the United States, it appears reasonable to support them permanently with this Federal legislation. There should be no doubt in the minds of the state authorities of the Federal interest in the conservation of oil as a continuing interest and not a matter for speculation from one session of Congress to the next. The Congress should assure the states of the continuing Federal interest.

"Although the problem of administration of temporary legislation as compared with permanent legislation may seem to be of minor consequence, the fact remains that efficient and understanding administration and permanent career-minded personnel make for better administration than a personnel that is constantly in doubt concerning whether it should use its training and experience in the administration of a temporary law or transfer to an organization that has greater security."

First witness to appear before the subcommittee was Senator Tom Connally of Texas, author of the measure, who supported his plea that the law be made permanent with an assurance that should any state attempt to take advantage of it to reduce production unduly, the assistance of the Federal Government would automatically and immediately be withdrawn.

Anticipating arguments of the opposition, the senator declared that if there are any abuses in the administration of the act, it is not the fault of Congress, and pointed out that the Federal courts are open "to every citizen for the determination and maintenance of his rights."

Involved in a colloquy with Representative Wolverton as to whether the act was an aid to monopoly, the senator asserted that "if the oil companies are charging too much, the Monopoly Committee and the Department of Justice should go out and prosecute them.

"I believe we have a duty to conserve this oil as much as we can for the future."

Expressing regret that oil exports are heavy, the senator was asked by the New Jersey member whether he would favor an embargo on exports and lifting of the excise taxes on imports, and said he would favor larger imports.

Senator Connally denied emphatically that the legislation had any purpose other than the furtherance of conservation, and insisted its effect on prices to the public was negligible, in the face of repeated assertions by Representative Wolverton that any limitation on production of a commodity inevitably tended to firm the price.

"Without control, Texas would have drowned itself in oil," the senator declared, "and at the same time would have drowned the oil industry in every state in the union." After the "orgy" of "two-bit" oil was over, he continued, it would have been found that the industry was in the hands of a few financially strong interests and the consumer would have higher prices than ever.

In view of the failure of Texas to enact permanent legislation, it was contended by Representative Wolverton, the Federal Government should limit application of the "hot" oil law. Senator Connally, on the other hand, declared the Government was enunciating a policy which would apply in any oil state and should not base its action upon what transpired in one state.

Differing with the senator only on the point of imports, Representative Lyle Boren of Oklahoma pointed out that his state had sufficient confidence in conservation to enact permanent legislation and should be given the full support of the Federal Government.

Almost immediately, under cross-examination by the New Jersey committeeman, Boren denied that the law affected prices and pointed out that since its adoption above-ground stocks of oil have increased tremendously, arguing that no merchant with his shelves loaded with unsold goods was likely to refuse to sell in the hope of getting higher prices later.

Pursuing the theme that imports would aid the cause of conservation, Representative Wolverton asked for the Oklahoma Congressman's views on imports and was told that the doors should be closed entirely to foreign oil.

"I believe that it is injurious to the oil industry and the purposes of conservation to permit or encourage the importation of foreign oil," Boren asserted, explaining that imports compete with the product of the small stripper-well producer whose production cost is high rather than with the large operators of flowing wells with low costs.

Monopoly Charged

Charges of monopoly were interjected into the hearings by Representative Pearson, who asserted the law was giving the big companies an increased control over the oil business. Like Congressman Wolverton, he insisted that artificial limitation of production had an inevitable effect upon prices and charged that his state was forced to pay too much for oil products as a result.

Explaining that he was merely trying to anticipate the arguments of opponents of the legislation, Representative Wolverton asserted that if the act was based entirely on conservation principles, exports should be barred and imports encouraged, but Representative Boren argued that imported oil, affecting high-cost domestic production, would result in the closing down of many stripper wells and the consequent loss of those wells and possibly the pools in which they operate and would, in the long run, add nothing to conservation.

Initial attack on the bill was delivered by Representative John M. Coffee of Washington, author of a bill to repeal the "hot" oil act, who declared the measure "is in the interest of the stability of the oil industry with incidental conservation" and has as its primary purpose "the freezing of the price of gasoline above a minimum, to keep it there or force it higher."

Representative Coffee advocated repeal of the excise taxes on imported oil and a flat embargo on exports.

"I see no reason why oil should be singled out for special and selective treatment while the people of the country are at the mercy of the greatest monopoly in the world," he asserted. There is no competition in the industry, he declared; the Standard Oil groups "control from 82 to 84 percent of the oil produced in the United States," and prices are made "on the seventh floor of the Standard Oil building in San Francisco."

Deviating from his discussion of the bill, Mr. Coffee asserted the Independent Petroleum Association of America, later to present its views, was a creature of the integrated companies, reading a list of contributions made to the association by the large companies, and charged that the Bureau of Mines based its forecasts of demand on figures furnished by the American Petroleum Institute instead of making independent investigations.

The major oil companies are "back" of the Connally bill, he alleged, holding that the Government should not set up any legislation limiting the production of a necessity on the ground of conservation while at the same time per-

In the soft formations of the Gulf Coast.

MAGNOLIA PETROLEUM COMPANY
A SOCONY-VACUUM COMPANY
PRODUCING DIVISION

Shreveport, Louisiana.

March 30, 1939.

Mr. J. C. Lowery,
Reed Roller Bit Company,
Houston, Texas.

Dear Mr. Lowery:

The writer would like to give you a report of the actual service obtained from your B. & R. Wire Line Core Barrel, which was used exclusively for coring all sands and markers while drilling our Roseberry Unit Well No. 1, Shongaloo Field, Webster Parish, Louisiana.

This well was drilled to a depth of 9380 feet, cutting seventy-two cores, a total of 404 feet in 136 hours and 6 minutes, ranging from 4215 feet to the total depth. Our recovery was most gratifying, amounting to 87.5 per cent. Not only was this per cent of recovery satisfactory, but the time and labor saved made the use of this core barrel most practical.

Yours very truly,

W. H. Newman.

W. H. Newman.

"WHEREVER THERE IS ROTARY DRILLING"

st.

or the harder formations in Shonqaloo

The REED "BR"

Wire Line

DRILLING-CORING BIT

WILL GIVE YOU

BETTER CORE RECOVERY

AT A

LOWER COST

PER FOOT

The Cutter Head . . . Tested and Proved to Cut Clean Cores Through the Hard Formation Rock Bit Shown

B-R HARD FORMATION (Rock Cutter Type) BITS

H. F. Type 1 Cutter B-R Bit

H. F. Type 2 Cutter B-R Bit

H. F. Type 2-C Cutter B-R Bit

REED ROLLER BIT COMPANY

HOUSTON · LOS ANGELES · OKLAHOMA CITY · NEW YORK

mitting unlimited exports and curtailing imports by taxes.

Referring to Secretary Ickes' letter, he said he had conferred with the Interior head before the hearings and had been told the latter was in favor of limiting exports and encouraging imports but felt that the "big oil companies wouldn't permit the enactment of legislation" to bring that about.

Not only should the Connally bill be repealed, Coffee declared, but there is no necessity for state conservation laws, legislation should be enacted providing for the divorce of pipe line operations from other branches of the industry and the integrated companies should be prohibited from operating filling stations. Integrated operation of filling stations, he asserted, has resulted in increasing the price of gasoline by at least 2 cents a gallon.

The mere existence of the Connally law has proved a deterrent to the offenses against it, the subcommittee was told by Russell B. Brown, general counsel of the Independent Petroleum Association of America, and as a result the conservation of our petroleum reserves has been made more efficient.

"Although our use of petroleum as a fuel or a source of power has increased yearly, our new discoveries have surpassed our consumption and we are adding to our reserves yearly," Brown declared. "The practical stabilization of the petroleum industry, through the efforts of the industry itself and the various states, has been one of the effects of this measure."

Denying emphatically that the act has served to maintain an artificial price for oil, the association counsel, admitting that a natural effect of the law has been to enable the states to halt the illegal production which flooded markets and produced bargain-sale prices, declaring that studies of the Department of Labor show that prices of petroleum products today have not kept step with the advance in the prices of other important commodities. "Had the Connally hot oil law been a price-fixing measure, it might have been expected that the price of petroleum and its products would have advanced with the other commodity rises," he continued.

"The members of our association believe that this measure has passed the experimental stage," Brown said. "It has proven its value and is entitled to rank as permanent legislation. If its necessity or importance was ever in doubt, that day has passed."

Brown answered charges made by Congressman Coffee that major companies had contributed to the independent association, explaining that the contributions referred to were made in 1933 when the association represented the whole industry in working out the rehabilitation program developed by the "Committee of Fifteen." Since then, he said, the majors have made no contributions and have no interest in the organization.

It was pointed out by Brown that in addition to Secretary Ickes' approval, continuation of the Connally Act has been endorsed by the Energy Resources Committee of the National Resources Board.

Asked by Chairman Cole if he felt the act should be made permanent in the face of Texas' limited extensions of its conservation law, the association counsel said "Yes, I do. There are so many other states involved and then, too, it might influence Texas to adopt permanent legislation."

In a letter inserted in the record by the chairman, W .G. Williams of Plainfield, N. J., recommended amendment of the law making it applicable uniformly in every state in which conservation laws have been adopted.

Answering charges by Representative Coffee that the Bureau of Mines forecasts of demand were based on A. P. I. figures, A. G. White, chief economist of the petroleum economics division, explained the methods followed by the bureau, declaring that the A. P. I. figures referred to are used only to bridge the gap between the bureau's latest records and the date of the forecasts and are adjusted before being used. No figures not actually analyzed and weighed by the bureau are included in the forecasts as official, he said.

White was questioned at length by Congressman Wolverton as to the possibilities of inaccurate data being submitted by oil interests cooperating with the bureau and expressed confidence in the integrity of the figures reported by the A. P. I., exporters and others cooperating. There is no need for legislation making the submission of data mandatory, he said in response to a question whether such a law would be desirable.

"In view of the fact that so frequently the argument of conservation is urged upon this committee as a basic reason for restricted production and enactment of legislation such as this, do you think it would be advisable for the federal government to make a survey of known reserves?" Representative Wolverton asked, referring to statements of other witnesses that there were no regular surveys of reserves.

"I think the more information on the reserve situation, the better," White replied.

"This being a natural resource so important to our national welfare, there should be definite information on the subject by a disinterested agency," the congressman commented.

Presenting the position of the Pennsylvania producers in favor of continuation of the law, Fayette B. Dow, counsel for the Pennsylvania Grade Crude Oil Association, testified that uncontrolled production in East Texas in 1933 forced heavy losses upon the Pennsylvania industry.

The policy of the federal government is expressed in the Interstate Compact and not in the Connally Act, Dow said. The latter merely makes unlawful the transportation of oil produced in violation of controls adopted under the compact.

Dow submitted charts showing that in the past twenty years the decline in gasoline prices has been substantially greater than in rate of gas, electricity, transit fares and freight rates controlled by public regulation.

Charging that application of the "hot" oil act during the past four years has resulted in "the setting aside of $243,000,000 worth of business to the major oil companies," William J. Kemnitzer, economic geologist, characterized the act as a "link in the chain" of legislation to control production.

"Although put forth as a conservation measure, the act was primarily trade-restraining, price-fixing and monopolistic," he declared.

"As a practical matter the Bureau of Mines, by 'forecasting' a demand far below the actual total demand, sets aside a wide margin of business exclusively for special interests; the states then adopt the forecast figures; and the Connally Act prohibits any domestic oil in excess of the state allowables from competing in interstate commerce forms so set aside."

This sharpest attack, however, was directed at the Bureau of Mines, whose figures he challenged, charging that "vested interests" controlled the bureau and urging a congressional investigation "of the contacts between the Interior Department and the major oil companies."

At the final hearing April 28, John D. Glass of Tyler, Texas, former chief investigator of the Federal Petroleum Agency, advocated that the Connally Act either be allowed to lapse in June

Monopoly investigation hearings postponed

Hearings on monopoly conditions in the oil industry will be the last to be held by the Temporary National Economic Committee before it recesses for the summer and may not be held before late June or early July, it was indicated by the committee's program as disclosed April 26, by Chairman O'Mahoney.

The committee last week opened a series of hearings which will cover a half-dozen subjects and carry it through to July, at which time the administration's monopoly investigation will be recessed until next fall.

Originally planned for late this month or early in June, the oil inquiry was pushed back in order that the committee's staff might have sufficient time for analysis of the replies to the questionnaires recently sent out to a large number of oil companies and for the compilation of other data to be used at the hearings. A large number of communications complaining of various situations in the oil industry have been received by the committee and will be studied before the hearings.

Michigan conservation law now practically assured

The Michigan senate passed the House Bill 139 (oil conservation act) 24 to 3 and voted to give the bill immediate effect. Passage of the bill by the senate was seen as almost certain enactment of the bill into law. In two previous sessions similar bills passed the house but were killed in the senate.

The bill must go back to the house for approval of two "mechanical" amendments tacked on in the senate. The amendments are legal phraseology changes.

The Michigan statute is a "streamlined" version of the New Mexico act. It places administration in the hands of the director of state conservation with a six-man advisory board, made up of representatives of the industry.

It provides for proration of production to reasonable demand, authorizes setting up of spacing programs, prohibits either physical or underground waste; provides for a tax of one eighth cent per barrel to finance its administration; enables confiscation of "hot oil."

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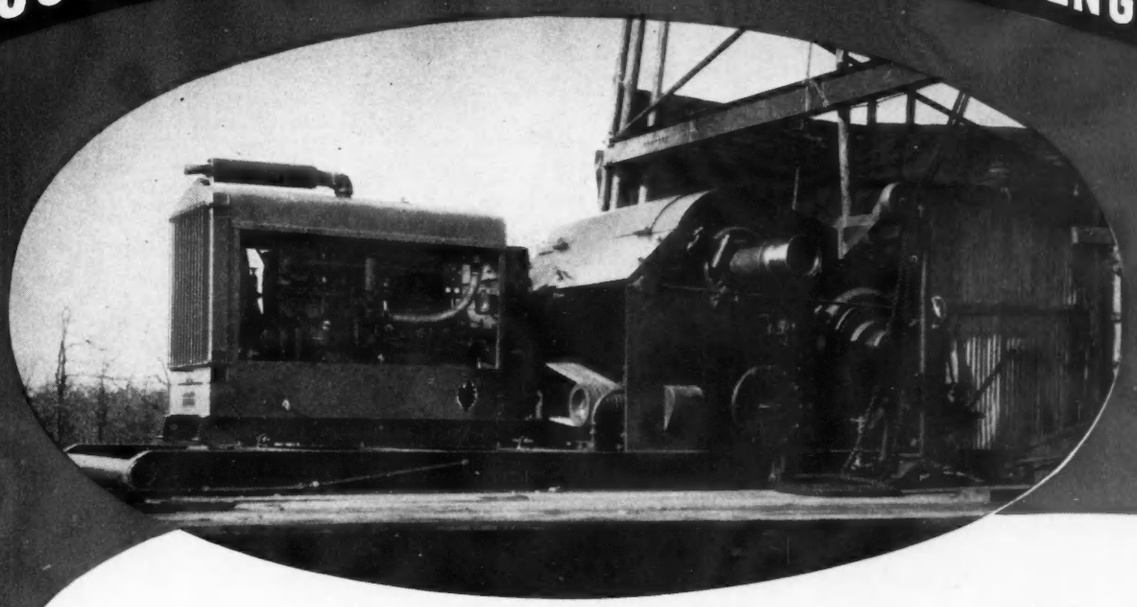

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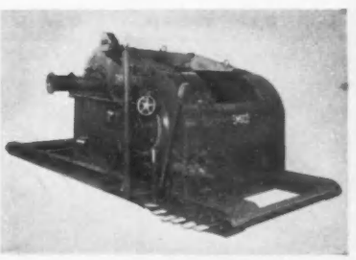

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or its application be extended to every field in all states having conservation laws.

Admitting that the act was adopted on the basis of conservation, Glass declared "the regulations, policies and practices for enforcement show that instead of serving this purpose it has merely aided and fostered monopolistic control of crude oil and its products by the major companies.

"It has squeezed the independents out of East Texas and is merely conserving East Texas oil for the major oil companies."

Glass disclosed that last year he submitted to Senator Connally, the White House and the Department of Justice a 30-page memorandum detailing his criticism of the law and recommending amendments calling for tender boards in all fields, providing that independents should not be investigated on any matter on which the majors could not be equally fully investigated, and providing that independents should be prosecuted for alleged violation under the misdemeanor rather than the severe-penalty provisions of the law.

Aside from reference of the memorandum by the White House to the Interior Department, no action has ever been taken, he said.

Administration of the Texas conservation law has become so efficient that there is no longer any need for federal aid, the witness said. Agreement with Representative Wolverton that the failure of Texas officials to appear before the subcommittee indicated their lack of interest.

There have been no recent cases of "hot" oil running in East Texas, he continued. And prosecutions have been confined to alleged violations of reporting requirements, and these, he

[*Continued on page 57*]

Market Situation

Prices fairly firm, but caution prevails because of high output . . . Gasoline stocks rise another 700,000 barrels and some addition to crude stocks

Markets unsettled by large output of oils

The oil industry's markets have remained fairly firm, following recent advances in gasoline tank car prices and some local raises of crude oil postings in Michigan and North Louisiana.

However, most of the buying of gasoline lately has been only for immediate needs, and an attitude of caution prevails regarding longer-term commitments.

Considerable uncertainty regarding the outlook for the gasoline market in coming months has been created by the unfavorable trends of crude oil production and refinery runs in recent weeks.

Operations at New Highs

Both crude production and crude runs to stills have touched new peaks for the year within the past two weeks, and gasoline stocks also have risen to a new high for 1939, having increased contra-seasonally for two consecutive weeks.

The gasoline inventory is several million barrels larger than economically desirable, according to petroleum economists, and it apparently is having an adverse effect on the gasoline markets.

Despite the recent slight improvement, gasoline tank car prices at Mid-Continent refineries are around ½ cent a gallon lower than at this time last year.

In Chicago last week Edward G. Seubert, president of Standard Oil Company of Indiana, in analyzing the unsettled retail price situation at a press conference preceding the annual stockholders' meeting, expressed the opinion that there was too much gasoline on hand. He was quoted as describing the price situation as very bad, and as saying that oil companies show a sharp decline in income, due to tough competition.

Prices Are Unsettled

In the early part of last week tank car prices of gasoline were holding steady or tending to advance further in the Mid-Continent refining districts. But the markets appreciably softened later in the week, and quotations were lowered by some refiners.

The prevailing supplies of gasoline appeared to be comparatively closely held, but offerings were brought out when it was indicated that no further advances of prices were likely to be made.

Natural gasoline encountered a similarly unsettled market, and in some instances quotations were lowered ⅛ cent a gallon in the Mid-Continent.

The markets for fuel oil appear stable, but the waning demand for the lighter oils has resulted in some further marking down of prices for those oils.

Crude oil output and refinery runs high

The oil industry's operations at wells and refineries have continued in excess of economically desirable levels. Crude oil production has risen materially above indicated market demand, as estimated by the Bureau of Mines; and refinery runs of crude oil remain comparatively high, despite some reduction from the peak of the year reached in the week ended April 15. Gasoline stocks have continued to increase, although they normally should be reduced in April, in consequence of seasonally good demand.

United States crude oil production averaged 3,526,700 barrels daily in the week ended April 22, a new peak for this year. That output was about 32,000 barrels a day greater than the previous week's production. It was 2.5 percent more than the output in the corresponding week last year.

Crude runs to refinery stills averaged 3,280,000 barrels daily in the week of April 22. That was 50,000 barrels a day less than the runs of the previous week, which had set a record for the

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
September 25, 1937	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
March 19, 1938	3,433,550	3,080,000	306,380,000	*93,192,000	122,067,000
March 26	3,405,600	3,080,000	307,557,000	92,858,000	122,969,000
April 30	3,396,150	3,215,000	307,147,000	91,339,000	128,270,000
May 28	3,098,650	3,150,000	301,583,000	87,946,000	134,315,000
June 25	3,083,900	3,025,000	293,463,000	82,412,000	137,801,000
July 30	3,316,400	3,240,000	288,514,000	76,864,000	144,294,000
August 27	3,388,500	3,255,000	285,029,000	71,754,000	146,926,000
September 24	3,251,150	3,220,000	280,278,000	68,605,000	150,468,000
October 1	3,231,800	3,235,000	280,852,000	68,602,000	151,759,000
October 29	3,237,500	3,145,000	275,824,000	67,590,000	153,719,000
November 12	3,243,250	3,180,000	273,394,000	67,551,000	*154,666,000
November 26	3,260,900	3,295,000	270,563,000	68,628,000	153,634,000
December 10	3,245,100	3,150,000	†269,509,000	68,587,000	150,779,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	144,823,000
January 28, 1939	3,248,250	3,235,000	271,763,000	77,279,000	139,349,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	133,671,000
March 4	3,314,850	3,230,000	272,971,000	85,379,000	131,930,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	129,915,000
April 1	3,358,200	3,170,000	276,119,000	87,277,000	127,893,000
April 8	3,443,900	3,145,000	275,774,000	86,613,000	126,199,000
April 15	3,494,500	3,330,000	275,857,000	87,071,000	126,798,000
April 22, 1939	3,526,700	3,280,000	.....	**87,769,000	126,893,000
April 23, 1938	3,440,160	3,150,000	‡306,774,000	91,479,000	127,148,000
Change in past year	+2.5%	+4.1%	—10.1%	—4.1%	—0.2%

* All time peak. ** Peak for 1939. † Lowest for 17 years. ‡ Stocks, April 16, 1938.

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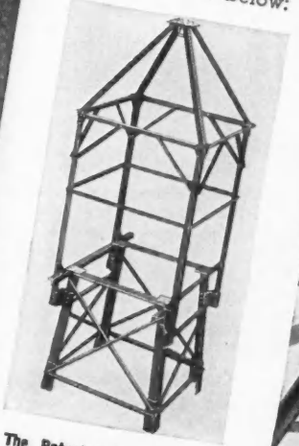

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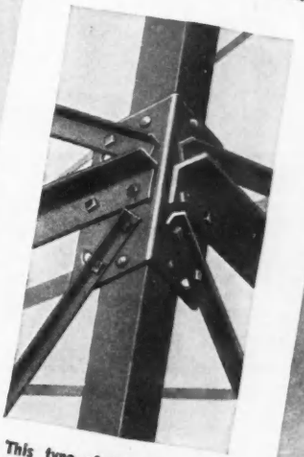

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CRUDE OIL PRICE SCHEDULES

MID-CONTINENT GRAVITY SCALE PRICES

(Posted October 11-13, 1938)

(Some fields of Mid-Continent have flat price postings, and are shown separately).

GRAVITY	[7]Okla.-Kans.	North La.-Ark.	North & W. Central Tex.	East Central Tex.	Gray Co. Tex.	Carson Hutchinson Co. Tex.	[1]Tomball Tex. Type	West Tex.-N. Mex.	[2]Gulf Coast (Tex.-La.)	[3]Some La. Gulf Areas	Jennings, La.	[4]Anahuac, Tex. Type	[5]Refugio, Tex. Type	[6]Mirando, Tex. Type	[8]Salt Creek, Wyo.
17–17.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18–18.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19–19.9	.....	.....	.....	.....	.....	.....	.....	*$0.53	*$0.79	*$0.79	.....	*$0.74	*$0.79	*$0.74	.....
20–20.9	$0.60	.....	.....	.....	.....	.....	.....	.55	.82	.82	.....	.77	.82	.77	.....
21–21.9	.63	.....	.....	.....	.....	.....	.....	.57	.85	.85	.....	.80	.85	.80	.....
22–22.9	.66	.....	.....	.....	.....	.....	*$0.95	.59	.88	.88	.....	.83	.88	.83	.....
23–23.9	.69	.....	.....	*$0.78	.....	.....	.97	.61	.91	.91	.....	.86	.91	.86	.....
24–24.9	.72	*$0.73	*$0.71	.80	.....	.....	.99	.63	.94	.94	.....	.89	.94	.89	.....
25–25.9	.75	.75	.73	.82	.....	.....	1.01	.65	.97	.97	.....	.92	.97	.92	.....
26–26.9	.78	.77	.75	.84	.....	.....	1.03	.67	1.00	1.00	.....	.95	1.00	.95	.....
27–27.9	.81	.79	.77	.86	.....	.....	1.05	.69	1.02	1.02	.....	.97	1.02	.97	.....
28–28.9	.84	.81	.79	.88	*$0.72	*$0.67	1.07	.71	1.04	1.04	.....	.99	1.04	.99	*$0.86
29–29.9	.87	.83	.81	.90	.74	.69	1.09	.73	1.06	1.06	.....	1.01	1.06	1.01	.88
30–30.9	.90	.85	.83	.92	.76	.71	1.11	.75	1.08	1.08	.....	1.03	1.08	1.03	.90
31–31.9	.92	.87	.85	.94	.78	.73	1.13	.77	1.10	1.10	*$0.87	1.05	1.10	1.05	.92
32–32.9	.94	.89	.87	.96	.80	.75	1.15	.79	1.12	1.12	.89	1.07	1.12	1.07	.94
33–33.9	.96	.91	.89	.98	.82	.77	1.17	.81	1.14	1.14	.91	1.09	1.14	1.09	.96
34–34.9	.98	.93	.91	1.00	.84	.79	1.19	.83	1.16	†1.16	.93	1.11	1.16	1.11	.98
35–35.9	1.00	.95	.93	1.02	.86	.81	1.21	.85	1.18	.....	.95	1.13	1.18	1.13	1.00
36–36.9	1.02	.97	.95	1.04	.88	.83	1.23	.87	1.20	.....	.97	1.15	1.20	1.15	1.02
37–37.9	1.04	.99	.97	1.06	.90	.85	1.25	.89	1.22	.....	.99	1.17	1.22	1.17	1.04
38–38.9	1.06	1.01	.99	1.08	.92	.87	1.27	.91	1.24	.....	1.01	1.19	1.24	1.19	1.06
39–39.9	1.08	1.03	1.01	1.10	.94	.89	1.29	.93	1.26	.....	1.03	1.21	1.26	1.21	1.08
40 and above	1.10	1.05	1.03	1.12	.96	.91	1.31	.95	1.28	.....	1.05	1.23	1.28	1.23	1.10

*Minimum price and applies also to purchases of lower gravity.

†Maximum price and applies also to purchases of higher gravity.

[1] Tomball, Raccoon Bend (Deep Sand) and Satsuma.

[2] Includes Goose Creek, Sugarland, West Columbia, Thompsons, Mykawa, Amelia, Webster, and Clear Lake fields.

[3] Includes Berwick Bay, Bay St. Elaine, Caillou Island, Dog Lake, Four Isle, Gillis, Horseshoe Bayou, Iberia, Jefferson Island, Lake Barre, Lake Pelto, Leesville and Port Barre fields.

[4] Anahuac, Dickinson, Gillock, Cedar Point, Fairbanks, Turtle Bay, Hull, Liberty, Orange, Pierce Junction, Barbers Hill and Raccoon Bend (shallow sand) fields.

[5] Includes Saxet, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

[6] Includes Duval, Jim Hogg, Jim Wells, Webb and Zapata counties, Texas, and Heyser and Placedo fields.

[7] Oklahoma Pipe Line (Carter Oil) and Magnolia schedules.

[8] Includes La Barge, Midway Dome, Dutton Creek.

Mid-Continent Flat Prices

	Flat Price	Date Posted
Arkansas:		
Smackover	$0.73	10–12–38
Louisiana:		
Garden Island	1.24	10–12–38
Gibson	1.04	10–11–38
Lafitte	1.04	10–12–38
Texas:		
East Texas	1.10	10–12–38
Talco	.55	10–12–38
Livingston, Cleveland	1.10	10–12–38
Van	93	10–12–38
Pettus	1.29	10–12–38
Pecos County	.78	10–12–38
Pecos Shallow	.65	10–12–38
Luling	.87	10–12–38
Lytton Springs	.99	10–12–38
Salt Flat, Darst Creek, Hilbig, Carroll, Clark and Zoboroski	.96	10–11–38
Flour Bluff	1.27	10–11–38
Seabreeze, Willow Slough, La Belle, Hardin	1 00	10–13–38
Clay Creek	85	10–13–38
Conroe	1.27	10–11–38
Cayuga	.81	10–19–38
Long Lake	1.08	10–19–38

Middle West Prices

Lima, Ohio	$0.90	10–13–38
Illinois	1.05	10–13–38
Illinois Basin	1.15	10–13–38
Centralia, Illinois	1.15	10–13–38
Princeton, Indiana	1.05	10–13–38
Western Kentucky	1.10	10–13–38
Kentucky River, Eastern Kentucky	1.20	10– –38
Big Sandy River, Eastern Kentucky	1.12	10– –38

Michigan Prices

	Flat Price	Date Posted
Porter, Greendale, Crystal	$0.97½	4–20–39
Buckeye, Bentley, Edenville and Beaverton	.95	4–20–39
Freeman	.89	4–20–39
Bloomingdale	.78	12–19–38
West Branch-Arenac-Ogemaw	.70	12–19–38
Allegan-Kent Co.	.88	4–17–39

Rocky Mountain States Prices

Colorado:		
Canon City, Ft. Collins, Wellington, Moffat and Florence	.90	10–11–38
Iles, Light	.98	10–11–38
Iles, Heavy	.92	10–11–38
Montana:		
Cat Creek—Cut Bank	1.10	10–11–38
Sunburst	.90	11–16–37
Dry Creek	.92	10–11–38
New Mexico:		
Artesia	.77	10–11–38
Hogback	1.00	10–11–38
Wyoming:		
Big Muddy	.98	10–11–38
Byron	.55	10–11–38
Elk Basin	.90	10–11–38
Frannie, Light	.55	10–11–38
Frannie, Heavy	.42	10–11–38
Garland	.50	10–11–38
Grass Creek, Light	.90	10–11–38
Grass Creek, Heavy	.40	10–11–38
Hamilton Dome	.35	10–11–38
Lance Creek	.77	10–11–38
Mill Creek	.72	10–11–38
Oregon Basin	.50	10–11–38
Osage	1.30	10–11–38
Poison Spider	.59	10–11–38
Rock Creek	1.00	10–11–38
Tensleep	.646	10–11–38

Pennsylvania Prices

	Flat Price	Date Posted
Bradford-Allegheny	$2.00	3– 6–39
National Transit Lines	2.00	3– 6–39
Sw. Pa. Pipe Line	1.65	3– 6–39
Eureka Pipe Line	1.59	3– 6–39
Buckeye Pipe Line	1.55	3– 6–39
Corning Grade, Ohio	1.02	1–24–39

Major Price Changes

	Penna. (Nat. Tr.)	Mid-Cont. (36 Gr.)	Calif. (26 Gr.)
June 19, 1933	Up 10	Up 19	.....
June 26, 1933	Up 10	.....	Up 9-12
July 6, 1933	Up 13	Up 10	.....
July 17, 1933	Up 15	.....	.....
July 28, 1933	Up 15	.....	.....
Aug. 11, 1933	Up 10	.....	.....
Aug. 24, 1933	.....	Up 10	.....
Aug. 30, 1933	Up 15	.....	.....
Sept. 6, 1933	Up 10	Up 10	Up 15
Sept. 8, 1933	.....	Up 15	.....
May 1 1934	Up 10	.....	.....
Nov. 6, 1934	Cut 25	.....	.....
Dec. 6, 1934	Cut 25	.....	.....
Jan. 4, 1935	Up 15	.....	.....
Feb. 4, 1935	Up 15	.....	.....
May 16, 1935	Cut 15	.....	.....
June 26, 1935	Cut 15	.....	.....
July 16, 1935	Cut 10	.....	.....
Aug. 29, 1935	.....	.....	Cut *1
Sept. 6, 1935	Up 5	.....	.....
Oct. 29, 1935	Up 15	.....	.....
Nov 1, 1935	.....	.....	Up *28
Nov. 18, 1935	Up 15	.....	.....
Dec. 6, 1935	.....	.....	Up *9
Jan. 9, 1936	.....	Up 10	.....
Jan. 13, 1936	Up 15	.....	.....
Feb 26, 1936	.....	.....	Up †5
Dec. 28, 1936	Up 12	.....	.....
Jan. 28, 1937	.....	Up 12	.....
Feb 24, 1937	Up 10	.....	.....
June 7 1937	Up 15	.....	.....
Sept. 1, 1937	Cut 22	.....	.....
Oct 12, 1937	Cut 25	.....	.....
Dec. 1, 1937	Cut 15	.....	.....
March 7, 1938	Cut 17	.....	.....
June 13, 1938	Cut 25	.....	.....
Sept. 1, 1938	Cut 12	.....	.....
Oct. 11, 1938	.....	Cut 20	.....
Jan. 21, 1939	Up 12	.....	.....
Feb. 2, 1939	Up 8	.....	.....
March 6, 1939	Up 12	.....	.....

* Signal Hill 26 gravity
† Seal Beach 26 gravity.

Crude Production Taxes

Oklahoma—Five percent of gross value less royalty interests.
Texas—2¾ cents or 2¾ percent, whichever is higher.
Louisiana—From four to 11 cents a barrel, depending upon gravity.
Arkansas—2.6 percent of gross market values.
Montana—Two percent of gross value at well and 3/8 of 1c per barrel.
New Mexico—Severance tax of 2 percent on oil and gas.
Wyoming and New Mexico—Production tax based upon state and county assessments.
California—.66443 mills per barrel of oil produced and 17.39 cents an acre on proved lands.

year at 3,330,000 barrels daily. The new rate was 4.1 percent above that for the comparable week last year.

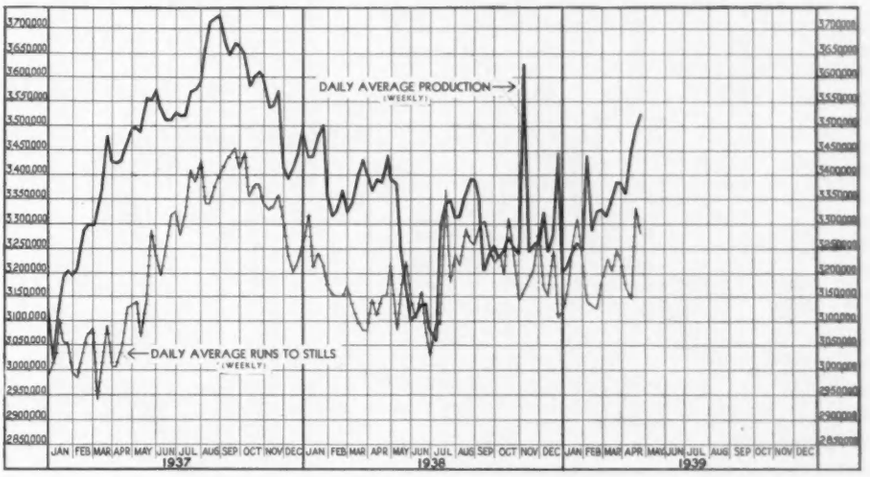
Gasoline production increased to 9,785,000 barrels in the week ended April 22 from 9,760,000 barrels the week before.

Gasoline stocks in the United States, including finished and unfinished, rose about 700,000 barrels in the week of April 22, and reached a new peak of 87,769,000 barrels for the year. At that point, the stocks were 4.1 percent under a year previously. However, they previously had been holding under the unsatisfactory 1938 levels by a larger margin.

Stocks of gas oil and fuel oil were increased about 100,000 barrels in the week ended April 22, having risen to 126,893,000 barrels. They were then 2/10 of 1 percent lower than one year previously.

Crude oil stocks were increased about 75,000 barrels in the week ended April 15, having gone up to 275,857,000 barrels. The crude stocks are about 10 percent lower than at this time last year.

United States Crude Oil Production and Refinery Runs


DAILY AVERAGE PRODUCTION →
(WEEKLY)
← DAILY AVERAGE RUNS TO STILLS
(WEEKLY)
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
1937
1938
1939

Only minor changes are made in prices for oil

Price changes in the oil industry in the past week did not affect crude oil postings, but there were some revisions of the quotations for refined products.

Gasoline tank car prices remained unchanged in the Oklahoma-Kansas refining districts, but were further readjusted in the Chicago marketing area, into a normal relation to the primary markets, having been advanced ⅛ cent a gallon in some instances. The Chicago market now reflects the advances made in the past several weeks in the Oklahoma-Kansas refinery prices.

Natural gasoline has been moving lately at 2½ cents a gallon in the Mid-Continent, whereas it previously was quoted by some sellers at 2⅝ cents.

Prices of kerosene have continued unchanged, but some of the lighter fuel oils are being offered for ⅛ cent a gallon less than a week ago.

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below, 4 to 4¼ cents a gallon; 63 to 66 octane, 4¼ to 4⅜ cents; 67 to 69 octane, 4½ to 4¾ cents; 70 to 72 octane, 4¾ to 5 cents.

Corresponding prices in the Chicago market were 3⅞ to 4¼ cents, 4 to 4⅜ cents, 4⅛ to 4⅝ cents and 4½ to 5 cents.

In East Texas, 60-62, 400 end point gasoline was priced generally at 4¼ to 4⅜ cents a gallon.

Natural gasoline, grade 26-70, was selling in the Mid-Continent markets,

CALIFORNIA CRUDE OIL PRICES

(Posted February 26, 1936; except El Segundo and Wilmington, posted October 15, 1937, and Greeley and Canal posted July, 1938). All gravity above those quoted take highest prices of that field.

Gravity	El Segundo and Signal Hill	Seal Beach Alamitos Heights	Huntington Beach	Inglewood	Playa Del Rey	Olinda Brea Canyon	Athens Rosecrans	Torrance	Richfield	Whittier East Coyote La Habra	Montebello	West Coyote Hills	Santa Fe Springs	New Hall McKittrick Kern River Round Mountain	Greeley, Canal	Mountain View	Midway-Sunset Buena Vista Hills Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Wilmington
14-14.9	$0.80	$0.79	$0.78	$0.79	$0.80	$0.76	.....	$0.80	$0.76	$0.76	$0.77	$0.78	.....	$0.70	....	....	$0.70	$0.70	$0.70	....	$0.75
15-15.9	.80	.79	.78	.79	.80	.76	.....	.80	.76	.76	.77	.78	.....	.70	....	....	.70	.70	.70	....	.75
16-16.9	.80	.79	.78	.79	.80	.76	.....	.80	.76	.76	.77	.78	.....	.70	....	....	.70	.70	.70	....	.75
17-17.9	.80	.79	.78	.81	.80	.76	.....	.80	.76	.76	.77	.78	.....	.70	....	....	.70	.70	.70	....	.77
18-18.9	.80	.79	.78	.84	.80	.78	.....	.82	.76	.76	.77	.78	.....	.70	....	....	.70	.70	.70	....	.79
19-19.9	.82	.79	.82	.87	.84	.81	.....	.85	.76	.78	.77	.78	....	.70	....	$0.70	.74	.74	.71	$0.70	.82
20-20.9	.85	.79	.85	.90	.88	.84	.....	.88	.78	.82	.77	.80	.....	....	....	.70	.78	.78	.72	.70	.85
21-21.9	.88	.79	.89	.93	.93	.88	.....	.91	.80	.85	.77	.84	$0.78	....	....	.73	.82	.82	.74	.70	.88
22-22.9	.92	.82	.92	.96	.98	.92	.....	.93	.84	.89	.79	.88	.78	....	....	.77	.87	.86	.78	.72	.92
23-23.9	.95	.86	.96	.99	1.02	.96	$0.84	.96	.88	.93	.82	.92	.78	....	....	.80	.92	.90	.82	.76	.95
24-24.9	.99	.91	1.00	1.02	1.06	.99	.88	.99	.91	.96	.85	.96	.82	....	....	.84	.97	.94	.86	.79	.99
25-25.9	1.03	.95	1.03	1.05	1.11	1.03	.93	1.02	.95	...	.89	.99	.86	....	....	.88	1.01	.98	.90	.83	1.03
26-26.9	1.06	1.00	1.07	1.09	1.16	1.06	.98	1.05	.98	...	.92	1.03	.90	Elwood	....	.91	1.06	1.02	....	....	1.06
27-27.9	1.10	1.05	1.11	1.12	.....	1.10	1.03	....	1.02	...	.96	1.06	.95	Ter-	$0.91	.95	1.10	1.06	....	....	1.10
28-28.9	1.14	1.10	1.14	1.15	.....	1.14	1.07	....	1.06	...	.99	1.10	.99	race	.94	.99	1.15	1.10	....	....	1.14
29-29.9	1.17	1.15	1.18	1.18	F.O.B.	1.17	1.12	....	1.09	...	1.03	1.14	1.03	....	.98	1.02	1.20	1.14	....	....	1.17
30-30.9	1.21	1.19	1.22	1.21	Pipe	1 21	1.17	....	....	...	1.07	1.17	1.08	F.O.B.	1.02	1.06	1.25	1.18	....	....	1.21
31-31.9	.....	.....	.....	1.24	Line	1.24	1.22	Kettleman Hills			1.11	1.21	1.12	Ship	1.06	1.09	1.29	....	....	....	....
32-32.9	.....	.....	.....	1.27	.....	1.27	1.27				1.14	1.25	1.16	....	1.09	1.13	1.34	....	....	....	....
33-33.9	.....	.....	.....	....	.....	.....	1.32	1.19			1.18	1.28	1.20	1.28	1.13	1.17	1.38	....	....	....	....
34-34.9	.....	.....	.....	....	.....	.....	1.37	....	1.23	...	1.22	1.32	1.25	1.32	1.17	1.20	.....	....	....	....	....
35-35.9	.....	.....	.....	....	.....	.....	1.42	....	1.27	...	1.25	....	1.29	1.35	1.20	....	.....	....	....	....	....
36-36.9	.....	.....	.....	....	.....	.....	1.46	....	1.31	...	1.29	....	1.33	1.39	1.24	....	.....	....	....	....	....
37-37.9	.....	.....	.....	....	.....	.....	1.51	....	1.35	...	1.32	....	1.37	1.43	1.28	....	.....	....	....	....	....
38-38.9	.....	.....	.....	....	.....	.....	1.56	....	1.39	...	1.36	....	1.42	....	1.31	....	.....	....	....	....	....
39-39.9	.....	.....	.....	....	.....	.....	1.61	....	1.43	...	1.40	....	.....	....	1.35	....	.....	....	....	....	....
40-40.9	.....	.....	.....	....	.....	.....	1.66	....	....	...	1.43	....	.....	....	1.39	....	.....	....	....	....	....
41-41.9	.....	.....	.....	....	.....	.....	.....	....	....	...	.....	....	.....	....	1.43	....	.....	....	....	....	....
42-42.9	.....	.....	.....	....	.....	.....	.....	....	....	...	.....	....	.....	....	1.46	....	.....	....	....	....	....
43-43.9	.....	.....	.....	....	.....	.....	.....	....	....	...	.....	....	.....	....	1.50	....	.....	....	....	....	....
44-44.9	.....	.....	.....	....	.....	.....	.....	....	....	...	.....	....	.....	....	1.54	....	.....	....	....	....	....
45-45.9	.....	.....	.....	....	.....	.....	.....	....	....	...	.....	....	.....	....	1.57	....	.....	....	....	....	....
46-46.9	.....	.....	.....	....	.....	.....	.....	....	....	...	.....	....	.....	....	1.61	....	.....	....	....	....	....
47-47.9	.....	.....	.....	....	.....	.....	.....	....	....	...	.....	....	.....	....	1.65	....	.....	....	....	....	....
48-48.9	.....	.....	.....	....	.....	.....	.....	....	....	...	.....	....	.....	....	1.68	....	.....	....	....	....	....

f.o.b. refineries at 2½ cents a gallon, and sales were reported at the same price f.o.b. Breckenridge, Texas.

Kerosene and Fuels

Kerosene prices f.o.b. Oklahoma refineries ranged from 3⅞ to 4¼ cents a gallon for the 41-43 water white grade, and from 4 to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3½ to 4⅛ cents and 3⅝ to 4⅜ cents.

Prices of light fuel oils were generally unchanged last week. In the Chicago market range oil was priced from 3⅜ to 4 cents a gallon. The No. 1 white oil was priced from 3¼ to 3⅞ cents, and No. 1 straw from 3¼ to 3½ cents. No 2 straw was 3⅛ to 3½ cents. No. 3 oil was 2⅞ to 3⅛ cents. No. 5 oils were 57½ to 70 cents a barrel. The No. 6 oil was quoted at 35 to 45 cents.

Pipe line reduces crude runs from Magnolia field

Arkansas Fuel Oil Company has informed Dixie Pipe Line Company that it will run only 93,000 barrels of crude during May from the Magnolia (Kerr-Lynn) oil field, Columbia County, Arkansas, which will cause a substantial reduction in per-well output unless another buyer is found.

Starting May 15 Standard Oil Company of Louisiana will buy 160,000 barrels of Rodessa crude from American Liberty Pipe Line Company, deliveries to be made over a six-months period.

Crude Production

United States output again at new peak for year; exceeds federal recommendation 129,249 barrels.

OUTPUT of United States oil fields during the week ended April 29 averaged 3,563,249 barrels daily, the highest level of the year. Production for the week prior, previous high for the year, was exceeded by 40,439 barrels as moderate increases in Texas, Oklahoma, and Kansas, and record Illinois output were offset only by a decline in California. Output exceeded Bureau of Mines estimate of demand for domestic crude by 129,249 barrels.

Texas output averaged 1,458,950 barrels daily as allowables finally reached a stable basis. The increase over the week previous was 8800 barrels, and state and federal allocation were overrun by 19,837 and 46,250 barrels respectively.

California Down

California yield was checked at 607,800 barrels daily, 5700 barrels off the pace of the preceding week, 15,800 barrels over bureau forecast, and 32,800 barrels higher than Central Producer's Committee recommendation.

Oklahoma lifted 462,125 barrels daily; an advance of 10,525 barrels over the week prior and on a level 34,125 barrels higher than state allowable and 11,175 barrels lower than federal forecast.

Louisiana production averaged 270,850 barrels daily to register a 1200-barrel gain over the previous week. Output exceeded state and federal allocation by 10,930 and 8850 barrels respectively.

Southern Illinois new pools registered a 13,775-barrel gain in producing 177,550 barrels daily to establish the state as Kansas, successor in the fourth position, even excluding the 8050-barrel production from Illinois old pools.

Kansas produced 177,725 barrels daily, bettering the rate of the previous week by 6700 barrels and overstepping state allowable by 20,875 barrels; federal recommendation by 25,025 barrels.

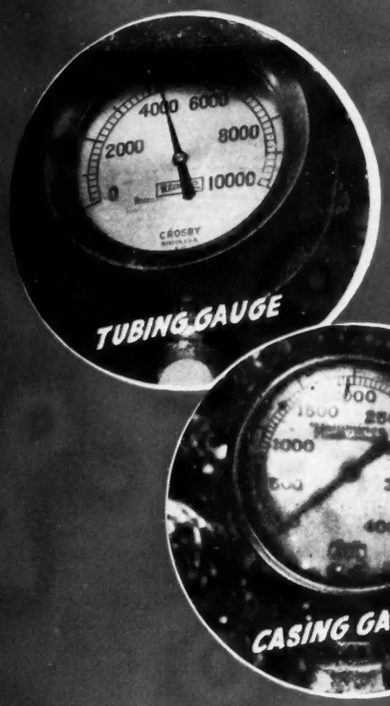
United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in April)	State Allowable in April	BARRELS DAILY FOR WEEK ENDED April 29	BARRELS DAILY FOR WEEK ENDED April 22
TEXAS—				
Texas Panhandle			68,950	63,050
North Texas			85,950	87,350
West Central Texas			32,050	31,950
West Texas			232,200	231,050
East Central Texas			104,550	106,050
East Texas Field			449,050	448,250
South Texas			258,900	258,650
Texas Gulf Coast			227,300	223,800
Total Texas	1,412,700	1,439,113*	1,458,950	1,450,150
CALIFORNIA—				
Long Beach			50,200	50,000
Santa Fe Springs			27,500	27,800
Huntington Beach			28,000	30,500
Dominguez			21,700	20,300
Ventura Avenue			34,400	32,900
Midway-Sunset			54,500	58,400
Kettleman Hills			51,000	49,500
Wilmington			89,100	87,700
Others			251,400	256,400
Total California	592,000	575,000†	607,800	613,500
OKLAHOMA—				
Oklahoma City			104,150	104,475
Seminole Area			114,650	108,650
Fitts			27,750	29,800
Others			215,575	208,675
Total Oklahoma	473,300	428,000	462,125	451,600
LOUISIANA—				
North Louisiana			76,400	75,300
South Louisiana			194,450	194,350
Total Louisiana	262,000	257,920	270,850	269,650

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in April)	State Allowable in April	BARRELS DAILY FOR WEEK ENDED April 29	BARRELS DAILY FOR WEEK ENDED April 22
KANSAS—				
Burrton-Haven			8,800	8,700
Russell County			21,125	24,175
Silica			11,500	10,850
Others			136,300	127,300
Total Kansas	152,700	155,850	177,725	171,025
NEW MEXICO	115,300	109,700	109,850	110,950
MICHIGAN	48,300		60,050	59,050
ARKANSAS	53,300		54,725	52,650
MOUNTAIN STATES—				
Wyoming	59,000		56,600	53,950
Montana	15,300		14,400	14,450
Colorado	5,000		3,450	3,550
Total Mountain States	79,300		74,450	71,950
EASTERN STATES—				
Pennsylvania Grade			69,050	69,100
Southern Illinois (New Pools)			177,550	163,775
Illinois-Indiana (Old Pools)			9,400	9,910
Others, Eastern			30,725	29,500
Total Eastern States	254,100		286,725	272,285
Total United States	3,434,000		3,563,249	3,522,810

*Daily average, considering Sunday shutdowns, water exemptions, and seventh day exemption at Rodessa.
†Recommendation of Central Committee of California Oil Producers.



4300 LBS. ON TUBING
NO PRESSURE ON CASING

Additional Proof of the Efficiency of

CAMERON
Type "G"
PACKER

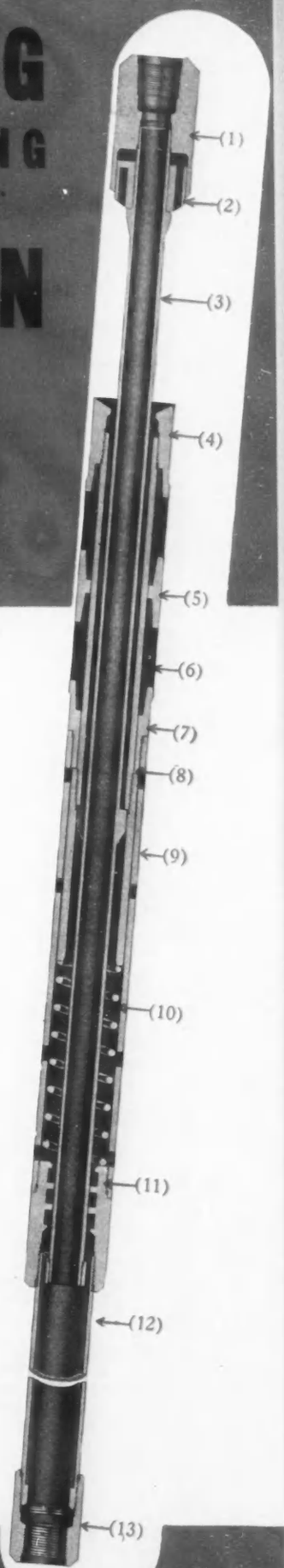
4,300 lbs. on the tubing, zero on the casing . . . clear proof that the Cameron Type "G" Circulating Anchor Packer set at 8307 feet in this deep, extremely high pressure well in Jefferson County, Texas, is sealing perfectly between tubing and casing.

Bottom-hole pressure in this unusual well is estimated at 6,500 lbs. Tubing flow pressure is variable, but has run as high as 5,100 lbs., with two Cameron Bottom Hole Chokes in the tubing string near bottom.

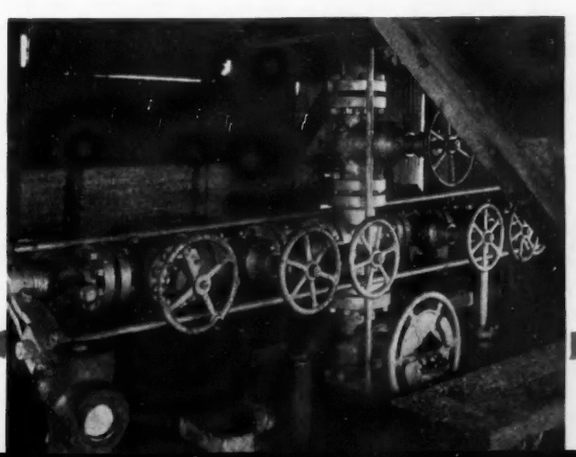
Safeguarded with Cameron Safety Completion equipment, this well was washed completely around so that clear water only was left in the casing above the packer. Screen is made up in the anchor pipe below the packer, and the entire assembly may be pulled from the well at any time it may be desired to kill the well for plugging-back, re-perforating, etc. Should screen be stuck, tubing may be rotated loose directly below the packer, and the tubing and packer pulled from the hole. Screen and anchor pipe may then be washed over and pulled with very little trouble or expense.

In wells in which the oil string is cemented through the producing sand, and the casing is to be perforated, a Cameron Type "G" Packer may be relied upon implicitly to effect a pressure tight seal between tubing and casing. The packer is set simply by letting off part of the weight of the tubing string; there are no slips, "J"-Tools or other complicated setting mechanisms. Due to its simplicity of design, and its positive self-feeding valve packing element, this circulating anchor packer has an unusual record of success in many of the deepest, highest pressure wells in the Gulf Coast area.

Full information on Cameron Type "G" Packers, and the Cameron simplified bottom hole setting, will gladly be provided on request.



PRINCIPAL PARTS OF THE TYPE "G" PACKER: (1) Valve cage; (2) Valve packer; (3) Flow pipe; (4) Valve seat; (5) Packer spacer; (6) Packers; (7) Packer retainer; (8) Mandrel; (9) Lower sleeve; (10) Spring; (11) Seal rings; (12) Drive nipple; (13) Reducing coupling.



High pressure Xmas Tree on well in Jefferson County, Texas, on which the above gauges were photographed.

CAMERON IRON WORKS, INC.
711 Milby Street, Houston, Texas
EXPORT: 74 Trinity Place, New York, N. Y.

California Distributor: HOWARD SUPPLY CO., Los Angeles

Oil-World Exposition

Members express hope shows will not be held oftener than once every two years, with Houston and Tulsa alternate sites . . . Next exposition for Houston not to be before 1942 . . . Officers reelected and directors are increased . . . Large crowd attracted by array of equipment on exhibit.

Without dissension, members of the Oil-World Exposition, Inc., agreed to a proposal that shows be held every four years in Houston instead of the previous policy of every two years, and that the International Petroleum Exposition be urged to adopt the same practice in Tulsa. This would mean expositions would not be more often than once every two years, with Tulsa and Houston alternating as the host city. To definitely move toward the adoption of such a plan, it was decided that the next Oil-World Exposition would not be held until the late spring of 1942, which is three years off. The International Petroleum Exposition has already scheduled a show for the spring of 1940, but it was the hope that members of this exposition would not hold another one until 1944.

These important actions were taken at the annual membership meeting of the Oil-World Exposition, Inc., on April 28.

The resolutions were adopted after the reading of a number of wires from major oil companies (published in an accompanying column) expressed the opinion an oil show more frequent than once every two years was too often, and after a number of supply company officials gave similar viewpoints or at least agreed they should abide by the wishes of the oil operating concerns.

John Suman brought up the question of the frequency of oil shows by reading the wires from the larger oil companies, and by stating he had discussed the possibility of holding an exposition every two years alternately between Tulsa and Houston with W. G. Skelly, president of the International Petroleum Exposition.

W. L. Childs, vice president and general manager of Reed Roller Bit Company, Houston, was the first supply official heard. Childs pointed out that the industry did not care to have shows oftener than every two years, and closed by stating "Reed Roller Bit Company will not show oftener than every two years, and will spread its business between Houston and Tulsa."

Wallace Wilson, Wilson Supply Company, favored the holding of an exposition in Houston. He pointed out this was the territory his concern covered, but stated he did not think the industry at large should be penalized for this reason.

M. F. Waters, of Hanlon-Waters, Inc., of Tulsa, stopped the discussion of the question by asserting time was being wasted, and that the operating concerns were the ones to decide about the frequency of the expositions. "If they do not send their men to see our products, we cannot sell equipment," he continued.

Then, Joe Russell, assistant to the vice president of Gulf Oil Corporation, moved that the next Oil-World Exposition be held in Houston but not earlier than the late spring of 1942. This was carried unanimously.

Officers Re-Elected

All officials of the exposition were returned to office by the membership, but the board of directors was expanded considerably. All were elected for a three-year term instead of the former two-year period, in view of the decision not to hold another show until 1942.

Therefore, John R. Suman, vice president of Humble Oil & Refining Company, again is the president; and Chase E. Sutton, division manager, the Pure Oil Company, continues as executive vice president. Other officers are: J. S. Abercrombie, J. S. Abercrombie Company, vice president; George A. Hill, Jr., Houston Oil Company of Texas, vice president; W. L. Childs, Reed Roller Bit Company, vice president; Wallace Wilson, Wilson Supply Company, vice president; and Ray L. Dudley, Gulf Publishing Company, secretary-treasurer.

JOHN R. SUMAN
not only was reelected president of the Oil-World Exposition, Inc., at its annual membership meeting, but also was presented a token of appreciation for his leadership.

In making the presentation, George A. Hill, Jr., said it was fitting that a stainless steel, self-winding, water sealed watch be given to Suman. The stainless steel was said to express Suman's purity and constancy of character, that he was as self winding as the watch, and that no one had as little respect for water as did this oil man.

The executive committee, also returned intact into office, is comprised of the following: J. S. Abercrombie, president, J. S. Abercrombie Company; S. P. Brown, vice president, Hughes Tool Company; Frank S. Carothers, branch manager, Norvell-Wilder Supply Company; W. L. Childs, vice president, Reed Roller Bit Company; Ray L. Dudley, president, Gulf Publishing Company; George A. Hill, Jr., president, Houston Oil Company; Joe H. Russell, assistant vice president, Gulf Oil Corporation; W. B. Sharp, president, Mission Manufacturing Company; John R. Suman, vice president, Humble Oil & Refining Company; Chase E. Sutton, division manager, Pure Oil Company; and Wallace Wilson, president, Wilson Supply Company.

New Directors Elected

New members elected to the board of directors of the Oil-World Exposition, Inc., were as follows: George Barham, drilling contractor, Shreveport; Clint Murchison, American Liberty Oil Company, Dallas; J. Sayles Leach, vice president, The Texas Company, Houston; Percy C. Jones, S. M. Jones Sucker Rod Company, Toledo, Ohio; Jack Crawford, Republic Supply Company, Los Angeles; J. A. Elkins, Vinson, Elkins, Weems and Francis, Houston; Bill Sievers, Security Engineering Company, Los Angeles; Karl Hasselman, president, Salt Dome Oil Company, Houston; H. J. Porter, drilling contractor, Houston; Cecil N. Housh, drilling contractor, Houston; Grover Simpson, Loffland Brothers, Tulsa; Earl Cunningham, Oil Well Drilling Company, Houston; C. A. Alcorn, Falcon Seaboard Drilling Company, Houston.

George F. Zoffman, Duval Sulphur Company, Houston; C. P. Parsons, vice president, Halliburton Oil Well Cementing Company, Duncan, Oklahoma; J. E. Holmes, Republic Steel Company, Pittsburgh; B. B. Root, vice president and general manager, Bridgeport Machine Company, Wichita, Kansas; Fred E. Cooper, Tulsa; P. C. Lauinger, Oil and Gas Journal, Tulsa; C. E. Morris, petroleum engineer; George B. Corless, Humble Oil & Refining Company, Houston; G. L. Kothny, vice president and general manager, Sperry-Sun Well Surveying Company, Houston; George J. Fix, Dallas; W. K. Cox, Caterpillar Tractor Company, and John G. Seiler, Tube-Turns, Inc., Louisville, Kentucky.

Directors Reelected

Directors reelected at the meeting follow: J. S. Abercrombie, president, J. S. Abercrombie Co.; R. E. Allison, oil operator, Shreveport; John O'H. Anderson, manager sales, Jones and Laughlin Steel Corporation, Pittsburgh; V. E. Ashford, district manager, Parkersburg Rig and Reel Co., Houston; F. M. Austin, superintendent, Petroleum Electric Power Club, Houston; J. C. Axelson, Axelson Manufacturing Co., Los Angeles.

Thomas H. Barton, president, Lion Oil and Refining Co., El Dorado, Arkansas; Richard Bloss, president, International Derrick and Equipment Co., Beaumont, Texas; A. M. Blow, vice president, Amerada Petroleum Corporation, Tulsa; A. I. Brainard, president, Beaumont Iron Works, Beaumont, Texas; J. D. Brance, president, Brance-Krachy Company, Houston; R. A. Broomfield, director, Barnsdall Oil Co., Los Angeles; S. P. Brown, vice president and general manager, Hughes Tool Co., Houston; Al Buchanan, president, Al Buchanan Drilling Co., San Antonio, Texas.

L. D. Cain, sales manager, Portable Rig Company, Houston; Frank S. Carothers, branch manager, Norvell-Wilder Supply Company, Houston; Frank Champion, general sales manager, Byron Jackson Co., Los Angeles, California; S. T. Childress, vice president and general manager, Rio Bravo Oil Co., Houston; W. L. Childs, vice president, Reed Roller Bit Co., Houston; H. J. Craig, sales manager, Baash-Ross Tool Co., Houston; John T. Crotty, president, Republic Supply Co., Houston; H. R. Cullen, president, Quintana Petroleum Company, Houston; W. H. Curtin, president, W. H. Curtin & Company, Houston.

M. N. Dannenbaum, president, M. N. Dannenbaum Company, Houston; K. W. Davis, president, Mid-Continent Supply Co., Fort Worth, Texas; Ray L. Dudley, president, Gulf Publishing Company, Houston.

H. John Eastman, president, Eastman Oil Well Survey Co., Long Beach, California.

F. Julius Fohs, president, Fohs Oil Company, Houston.

E. W. Gildart, president, Norvell-Wilder Supply Co., Beaumont, Texas; A. C. Glassell, Jr., oil operator, Shreveport, La.; E. F. Goggins, president, Gulf Engineers, Inc., Houston; N. G. Guiberson, vice president, Guiberson Corp., Dallas; H. W. Gwilliam, vice president, Ohio Oil Company, Houston.

Harry C. Hanszen, oil operator, Houston; Dudley Hardcastle, vice president, Spang Chalfant, Inc., Pittsburgh; R. H. Hargrove, vice president, production & pipe line, United Gas Public Service Co., Houston; Frank L. Hereford, secretary-treasurer and manager, Murray Brooks Hardware Co., Ltd., Lake Charles, La.; George A. Hill, Jr., Houston Oil Company, Houston; Jack Hoelzel, vice president, Pittsburgh Screw & Bolt Corporation, Pittsburgh; Thomas Hughes, Sabine Supply Co., Orange, Texas.

William Keck, president, Superior Oil Co., Los Angeles; O. W. Killam, oil operator, Laredo, Texas; J. M. Kinabrew, vice president, Standard Supply & Hardware Co., New Orleans; L. O. Koen, vice president, W-K-M Co., Inc., Houston.

Ed G. Lenzner, general manager, Oil-World Exposition, Inc., Houston; Harry Leonard, independent operator, Roswell, N. M.; E. G. Leonardon, vice president, Schlumberger Well Surveying Corp., Houston; Gage Lund, manager, Standard Oil Co. of Texas, Houston.

C. A. McCollum, division manager, National Supply Co., Houston; A. M. McCorkle, vice president, Stanolind Oil & Gas Co., Houston; A. T. McDannald, owner, Smith & McDannald, Houston; J. H. McEvoy, vice president, McEvoy Company, Houston; D. T. McIver, assistant general manager, Freeport Sulphur Co., New Orleans.

W. R. Martin, Martin-Decker Corp., Los Angeles; Robert J. Miller, owner, Robert J. Miller Co., Houston; H. W. Millmine, president, Texas Rubber & Specialty Corp., Houston; M. E. Montrose, division manager, Lane-Wells Co., Houston; C. B. Moore, city sales manager, Frick-Reid Supply Corp., Houston; J. E. Moore, district sales manager, Bethlehem Steel Corp., Houston; Daniel J. Moran, president, Continental

Major Oil Firms Favor Exposition But Once Every Two Years

Prior to adopting a resolution favoring the holding of an exposition not oftener than once every two years, and proposing that Houston and Tulsa alternate, members of the Oil-World Exposition had the benefit of expressions from a number of major oil companies.

That the major oil firms favor oil shows not being more frequent than once every two years was shown definitely by the replies received in answer to wires sent by John R. Suman, president of the Oil-World Exposition.

The wire sent by Suman read as follows:

"We are planning to make proposition to International Petroleum Exposition at Tulsa under which there would be held two oil shows in each four-year period instead of one every year, alternating the shows between Houston and Tulsa. Will you kindly wire me before eleven A. M., Friday, whether your company as one which sends its men to oil shows prefers that there be held two oil shows in a four-year period or one oil show per year as it now stands."

(Signed) John R. Suman
President, Oil-World Exposition
Houston, Texas

Following are the various replies received:

"Certainly approve suggestion that oil industry have two shows in each four-year period. Present shows are entirely too frequent."

W. B. Pyron, Jr.,
Vice-President,
Gulf Oil Corporation.

"We feel that two oil shows in a four-year period would be better for the industry and its exhibitors than one show per year."

J. S. Leach,
Vice-President,
The Texas Company.

"We would prefer that there be held two oil shows in each four-year period in preference to one show per year."

M. J. Rathbone
Standard Oil Co.
(Louisiana)

"We are doubtful of value to us of oil shows in general and are considering reduction in number of our employees attending. In our opinion, the holding of shows annually is an unwarranted expense and burden to the industry not justified by rate of improvements in machinery."

A. J. Cunningham,
Manager
Standard Oil Co. (Texas)

"Your wire re proposition to be made to International Petroleum Exposition at Tulsa under which there would be held only two oil shows in each four-year period, we believe this definitely advisable and strongly recommend that it be adopted."

Commer Plummer,
Asst. Gen. Mgr. Production
Pure Oil Company

"Yours 27th, our vote cast for two shows in four-year period."

Dan Moran, President
Continental Oil Company

"Believe yearly oil show unnecessary and your proposal of two shows in a four-year period a step in right direction."

A. M. Blow, Vice-President
Amerada Petroleum
Corporation

"Your wire twenty-seventh, we prefer there be held two oil shows in each four-year period instead of one every year and that the two oil shows in four-year period alternate between Houston and Tulsa."

L. F. McCollum,
Carter Oil Company

"Prefer two oil shows in a four-year period."

John A. Brown, President
Socony-Vacuum Oil Co., Inc.

"Reference International Petroleum Expositions, we would much prefer exposition be held every other year rather than every year and you have our support in trying to obtain the alternation of these shows between Houston and Tulsa. Just returned last night from the East and am sorry did not have opportunity to attend your show. Understand from our men it was outstanding."

K. S. Adams,
Treas. and Asst. to Pres.
Phillips Petroleum
Company

"We think two oil shows in four years preferable to annual show."

Atlantic Refining Company

"We strongly favor limiting oil shows to two in each four years."

Charles F. Roeser, President
Roeser and Pendleton, Inc.

"We think one oil show every two years sufficient but take no position as to whether it be held in Houston or Tulsa."

Magnolia Petroleum Company
C. L. Gladden, Vice-President,

"Our people would prefer one oil show each two years."

O. D. Donnell, President,
Ohio Oil Company.

Oil Company, Houston; Harry J. Morlang, vice president, National Tube Co., Dallas; Joseph S. Morris, Allen & Morris, San Antonio, Texas; W. J. Morris, president, Continental Supply Co., Dallas; R. A. Mueller, president, Gray Tool Co., Houston; Fred F. Murray, vice president, Oil Well Supply Co., Dallas.

C. E. Naylor, president, Maintenance Engineering Corp., Houston; J. W. Newton, vice president and manager refineries, Magnolia Petroleum Co., Beaumont.

Martin O'Brien, vice president, Republic Production Co., Houston; George O'Leary, president, Houston Oil Field Material Co., Houston.

R. W. Pack, division manager, Sun Oil Company, Beaumont, Texas; J. R. Parten, president, Woodley Petroleum Co., Houston; Louis Pearce, vice president and general manager, Texas Iron Works, Houston; Arthur J. Penick, president, Oil Center Tool Co., Houston; Tom Pew, vice president, General Crude Oil Co., Houston; M. W. Phelps, sales manager, Oil Well Supply Co., Houston; W. W. Plowden, president, Plowden Supply Co., Houston.

George L. Ratcliffe, general manager, Baroid Sales Co., Los Angeles; Sid Richardson, independent operator, Fort Worth, Texas; Charles F. Roeser, Roeser & Pendleton, Fort Worth, Texas; Joe H. Russell, assistant vice president, Gulf Oil Corp., Houston.

Ed Salrin, vice president, Tide Water Associated Oil Company, Houston; Floyd L. Senter, division manager, National Tank Co., Houston; W. D. Shaffer, owner, Shaffer Tool Works, Brea, California; J. L. Shakely, president, Frick-Reid Supply Corp., Tulsa; W. B. Sharp, president, Mission Manufacturing Company, Houston; Nowery J. Smith, president, Nowery J. Smith Co., Houston; D. R. Snow, vice president, Barnsdall Oil Co., Tulsa; George W. Strake, president, Strake Petroleum, Inc., Houston; John R. Suman, vice president, Humble Oil & Refining Co., Houston; Chase E. Sutton, division manager, Pure Oil Company, Houston; T. E. Swigart, vice president, Shell Petroleum Corp., Houston.

J. H. Teer, general manager, Layne & Bowler Co., Houston; F. H. Thrailkill, district manager, Continental Supply Co., Houston; Edgar Tobin, president, Edgar Tobin Aerial Surveys, San Antonio, Texas; H. E. Treichler, general manager, Texas Gulf Sulphur Co., New Gulf, Texas; W. C. Trout, president, Lufkin Foundry & Machine Co., Lufkin, Texas; E. R. Turner, manager, Pan American Production Co., Houston.

J. A. Vickers, president, Vickers Petroleum Co., Wichita, Kansas.

Wallace Wilson, president, Wilson Supply Co., Houston; John A. Worthington, manager, industrial sales and engineering, Koppers Co., American Hammered Piston Ring Co., Baltimore.

Exposition a Success

The second and largest Oil-World Exposition, held in Houston last week, broke previous attendance records. It also was the site of delivery for the welcome news that "Texas oil production for May and June will be kept within the market demand estimate of the Bureau of Mines." These were the reassuring words spoken by Colonel E. O. Thompson, member of the Texas Railroad Commission, at the opening ceremonies. Thompson declared he and Commissioner Jerry Sadler had agreed to release this wholesome bit of news on this occasion.

The commissioner also stated his stand on additional regulation of the oil business, telling the assembled executives that there was no need of further governmental control.

"The business statesmanship shown here," he said, "by the assembling of this great exposition gives me courage and confidence that your industry will need less and less regulation, instead of more and more. I congratulate each and every one who had a part in this great enterprise, and I predict that the oil industry will show the way to American industry generally, that through the exercise of business statesmanship and not through regulation will America go forward."

Importance of Texas Stressed

John R. Suman, viee president of Humble Oil & Refining Company, and president of the exposition, stressed the social and financial importance of the oil industry to the nation and Texas. Some of his main points were:

"The American petroleum industry makes use of the tools, the heavy machinery, and the delicate precision instruments you see displayed at the Oil-World Exposition to contribute more than four billion dollars annually to the national income of America. In wages and salaries alone the petroleum industry distributes about one and a half billion dollars among its employes. The balance is made up of payments for royalties, rentals, and bonuses; purchases of equipment; payment of railroad transportation charges; and payment of taxes.

The American petroleum industry has doubled the volume of work and service obtainable from a barrel of crude oil in the last twenty years. In World War times each one hundred gallons of crude oil yielded only about twenty gallons of gasoline. Todav one hundred gallons of crude oil will produce, one the average, 44 gallons of gasoline of a much higher quality.

"Although the petroleum industry is among the top-ranking industries in the United States it occupies a position of greater significance in the state of Texas. Since the discovery of oil in San Antonio in 1889, Texas has produced one-half billion barrels of the 21 billion barrels of crude produced in the United States. At present 134 out of the 254 counties in Texas produce oil, and have 360 separate producing areas with 85,000 producing wells. It is estimated that over 35 percent of the land in Texas is under lease as proven or possible oil-producing acreage.

In addition to producing 40 percent of the crude produced by the United States during 1938, more income was contributed by the industry through the operation of pipe lines, natural gasoline plants and refineries, and it is estimated that the total income provided by petroleum in 1938 composed about one-third of the total Texas income of $2,300,000. The petroleum industry provides a livelihood directly or indirectly for approximately 1,000,000 people in Texas, 175,000 of whom are employed directly in the production, transportation, or refining branches of the industry. During 1938 about $699,000,000 was spent in Texas, exclusive of gasoline taxes, which amounted to $42,738,195. Of the total expenditure, nearly one-half was spent in drilling 12,184 new wells and the remainder was spent in operation, production, transportation, refining, and marketing. During 1938 payroll was nearly $185,000,000 and expenditures for supplies and equipment, and services was $280,000,000. Texas possesses, according to the American Petroleum Institute, 9,447,764,000 barrels of the 17,348,146,000 barrels of crude oil reserve in the United States as of January 1, 1939."

Numerous Technical Meetings

Numerous technical meetings were held throughout the exposition. Several sessions were conducted under the auspices of the Drilling and Production Committee. Pipe line, safety and export conditions were other branches of the industry that held sessions.

Most of the papers delivered at these sessions are abstracted in the following columns:

Drilling and Production Papers

The drilling and production programs, held Tuesday, Wednesday and Thursday, were heavily attended by both oil operators and manufacturers. Twenty-two papers were presented to cover a wide range of drilling and production activities. Care and maintenance, and proper use of equipment were stressed in manufacturers' papers, while the proper selection of equipment and methods was also featured.

George B. Corless, Humble Oil & Refining Company, was chairman of the Drilling and Production Committee (program); Joe J. King, United Gas Pipe Line Company, and J. H. Pound, Rice Institute, were sponsors Tuesday; Arthur G. Levy, Fohs Oil Company, and Harold Vance, Texas A. & M. College, were sponsors Wednesday; and George L. Nye, Tide Water Associated Oil Company, and James U. Teague, Humble Oil & Refining Company, were sponsors Thursday.

An abstract of papers presented follow:

Core Drills Applied to Oil Field Service

By J. A. NOYES
Sullivan Machinery Company

The modern, large rotary well-drilling outfit is the direct descendant of the old time, small diamond core drill. The ancient and honorable diamond core drill is now, however, adopting some of the modern rotary practices, such as the use of drag and cone bits and the use of heavy mud fluid.

Along with the improvement in other oil field equipment, the core drill also has been developed rapidly. This improvement was the answer to the need

Corrosion in Wire Rope is like old-fashioned "Rhumatiz"

The bearings just don't work. Hence flexibility is lost and the extra bending load from this stiffness quickly destroys the individual wires. A corroded rope is a dangerous rope to use. If the wires of a rusty rope are still in good condition, the rope may be salvaged. A thorough treatment with a penetrating lubricant will free the bearing surfaces and permit the wires to slide by each other when the rope is flexed. But no amount of oil can replace worn surfaces. The best thing is . . . don't let your rope get "Rhumatiz". Wire Rope is made with proper oil impregnation of the hemp centers and ample slushing of the wires inside and out to assure proper lubrication during storage, marketing and initial use. Protect it by greasing the surface during use and enjoy the longest possible service from Wire Rope.

WICKWIRE ROPE

WICKWIRE SPENCER STEEL COMPANY

General Offices: 41 East 42nd Street, New York City; Sales Offices and Warehouses: Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles, Tulsa, Chattanooga, Houston, Abilene, Texas, Portland, Seattle. Export Sales Department: New York City

for high speeds, lower costs, and easy mobility, and has been possibie by the use of alloy steels, diamond substitutes, and fishtail and cone bits. In oil field practice, it is now seldom considered necessary to core the entire hole, so drag type bits or cone bits are utilized when merely making hole.

The modern fast portable core drill has now been developed to the point where it is not only a tool indispensable to the geologist for extracting cores and drilling electrical logging holes and to the seismograph surveyor for drilling shot holes, but, on account of the trend toward slim-hole drilling, a tool invaluable to the production man for small-hole production drilling.

Medium size rigs that are used for structure testing and electrical logging holes frequently will average better than 30,000 feet of hole per month when drilling holes averaging 1000 feet in depth. Holes for similar use, up to 2300 or 2400 feet, are completed at the rate of two holes per week, overall time.

Water Treatment in the Oil Fields

By E. F. FELLOWS
National Aluminate Corporation

Water treatment in the oil fields has probably received less attention during the past decade of rapid developments than any other phase of operation. The science of water treating is comparatively young. Very little development occurred prior to the beginning of the twentieth century and the major progress has been made during the past decade.

There need now be no guess work attached to problems of water treatment. In too many drilling operations a rig is moved to location, a water well dug, the boilers fired and drilling started. In a short time the boilers start to give trouble, and bad water rightfully gets the blame.

The total loss to oil companies operating in the bad water area runs into a staggering annual total. Any operator starting in an area new to him should carefully check the available water supplies before moving in rig or starting operations of any kind. Generally a useable supply can be found, and almost always a chemical means can be provided so that uninterrupted operation can be maintained.

Water is the greatest known solvent. Almost any material is to an extent soluble in water. This solvent action is responsible for the high quantities of impurities found in water.

There are two basic methods of chemical treatment, although a wide range of materials may be used as called for by different supplies. These may be classed as "external" and "internal."

If you have a water treating problem, turn it over to a reputable company whose products and methods are backed by research and experience. Do not depend upon the so-called boiler compound that is the answer to all ills.

Air Cleaners for Oil Field Engines

By C. C. SOWERBY
American Air Filter Company
Louisville, Kentucky

The importance of air cleaners for the protection of internal combustion engines has been forcibly called to the attention of engine operators during the past few years as a result of dust storms in parts of the United States. There are numerous cases on record where engines have been practically ruined in less than 24 hours when operated during a dust storm without air cleaner protection.

All unfiltered air contains a certain amount of dust, even though it may not be visible, and all dust is abrasive. Dust or other abrasive matter entering the air intake or crank-case-breather opening will mix with the lubricating oil and act much as a grinding compound. Surveys by impartial aerologists indicate that the dust concentration of apparently clean air in various parts of the United States will vary from one grain to four grains per thousand cubic feet.

I hope these remarks have served to convince you that air cleaners are a very important accessory and perform a service that is essential to satisfactory engine operation.

The principal air filters now in use are: the dry-type filter; oil coated viscous impingement type filters; authmatic self-cleaning filters; oil-bath air cleaners; cycoil gas cleaner.

Positive Control of Lubricating Conditions in Diesel Engines

By PAUL WILLIAMS
General Manager, Skinners Purifiers, Inc.

The control of lubricating conditions in the Diesel engine consists of constantly, or very frequently, removing from the lubricant all of the injurious impurities. This is not to be confused with salvaging lubricating oil after it has been used beyond its useful period and has caused dirty engines.

In the slow-speed Diesel engines there is usually a quantity of lubricating oil in a reserve circulating tank, and this oil is constantly pumped into the bearings, returning to the tank. The overhead oil will contain carbonaceous materials, both from the lubricant and from the fuel, certainly entrained moisture, and if the fuel is of such a character that it has excessive gums these will work into the lubricant. There will also be fine metal particles and may be traces of dust.

When a relatively small amount of lubricating oil is used for piston lubrication it should never be used further in the engine, either for piston lubrication or in the crankcase without first being absolutely cleaned of these contaminants.

The lubricating oil in the main part of the engine gradually builds up impurities consisting more of metal particles, a slow build-up of entrained moisture and some carbon. Over a period of time there is also a build-up of acidity in the oil and a tendency for oils to become higher in viscosity.

If a lubricant is kept in such condition that the solids in the oil are well under 0.5 percent and is kept dry the lubricant has a tendency to pick up dirt instead of throwing it out, the engine will be kept clean inside, the lubricant will be doing all that good lubrication can do from having ring sticking.

Recent Developments in Oil Well Cements

By J. B. ROBERTS
Lone Star Cement Corporation

Deeper drilling has placed new and more important demands upon oil well cements. Efforts to increase the recovery factor have increased the number of reconditioning jobs, in which cement plays an important part. Increased knowledge of underground conditions has spurred the development of special types of cement to meet specific conditions. Strength is affected by the amount of mixing water used and any contamination of the slurry by the drilling fluid. The temperature to which the cement is exposed, after placing, will affect the rate of gain of strength and the strength at any given age. The effect of elevated temperatures upon rate of gain of strength is now more fully understood and slow setting cements have been developed as a solution to this phase of the problem.

Density is closely allied to strength and is affected by the same factors that alter strength. Density is a measure of the ability of the hardened cement to protect the pipe from corrosive waters and to afford a complete shut-off at the bottom of the casing. The setting time of cements, always an important item in oil-well operations, is now measured by a continuous-stirring device which measures the rate of stiffening of a slurry up to the point at which it would no longer be pumpable.

Length of pumpability is the most important property to be considered and while affected by water ratio, water loss, and contamination by chemicals in the drilling mud, the original composition of the cement is the chief determinant of this quality. Rearrangements of chemical composition to provide a high early strength cement are now being made without decreasing pumpability.

Recently more attention has been given to the initial viscosity of cement slurry, and attempts are being made to provide cements which will have a low initial viscosity when mixed in heavy slurries. Along with developments in the cement itself new improvements in cementing technique have made for a service capable of meeting today's difficult cementing problems.

Resilient Materials of Construction for the Petroleum Industry

By H. LOGAN LAWRENCE
E. I. du Pont de Nemours & Company

Rubber is one of the most versatile materials known to man. One of the properties of rubber that make it so valuable is elasticity. When we speak of the valuable properties of rubber, we are thinking not of the raw material but of finished products made from it. Crude rubber must be mixed with various quantities and types of reinforcing agents, inert fillers and other compounding ingredients.

An important characteristic of rubber compounds is the ease with which they may be combined with other materials. The use of rubber as a material of construction has simplified many design problems for the engineer.

Rubber compositions unfortunately have a number of limitations that seriously restrict their use in many applications. Rubber products are subject to oxidation, they deteriorate in physical properties and eventually crack badly, heat seriously reduces the life of rubber products, many chemicals attack rubber, and exposure to petroleum products causes rubber to swell excessively. This swelling is accompanied by such rapid deterioration of physical properties as to make rubber useless in a short time.

The increased use of resilient ma-

terials of construction has created a demand for new materials capable of withstanding service conditions that rapidly deteriorate rubber. Within the last 20 years the chemical industry has assumed the responsibility of providing these new materials, and as the result of their efforts, there are at present on the market several different synthetic products, each of which is, in some respects, similar to rubber. However, none has exactly the same composition as natural rubber, and in the interest of technical accuracy none can be called synthetic rubber in the accepted sense of the term.

For clarity, these synthetics may be divided into two classes. The first class includes those synthetics which in chemical composition are entirely unrelated to natural rubber, and in the second are those products similar in chemical composition to natural rubber.

The petroleum industry has been quick to grasp the opportunities offered by the use of oil-resistant rubber-like synthetic materials, and it is to their credit that they have recognized the danger of overemphasizing first cost as compared to operating efficiency, safety, and overall economy.

The Tuboscope

By FRITZ HUNTSINGER
Oil Field Machine & Supply Company

How to look inside of drill pipe, casing, tubing and similar tubing goods, and do it efficiently—these were the posers that started the development of the instrument now known as "Tuboscope." The Tuboscope consists primarily of a system of lenses set in tubes lined with oxidized brass. A light source and an angle mirror are located at the anterior end and a focusing eyepiece is at the posterior end. The wide angle objective lens at the anterior end makes it possible to see down the pipe for a distance of five inches at a time and shows the entire internal surface for that distance, while a supplementary angle mirror behind the light source gives a perpendicular image of a small area. Pictures of any portion of the internal surface of the tubular goods are taken by a specially built camera; the exposure varying with the length of the instrument, the size of the illuminating lamp, and the I.D. of the article inspected.

It is essential that the internal surface of goods to be inspected be thoroughly cleaned. The pipe is racked with one end lined up evenly and plenty of unobstructed space at both ends of the rack. A one-foot stiff wire brush, mounted upon ½-inch pipe and rotated, is forced through the pipe to loosen scale while compressed air is jetted out of the buffer shaft directly behind the brush. After inspection each length of pipe is sprayed with a rustproofing compound.

Reports rendered after inspection detail the condition of each joint, and each joint is also paint-marked to signify its condition. Pictures of defective areas are submitted with the report in order to give more complete explanation.

Modern Sucker Rod Pumping

By D. O. JOHNSON
Manager, Field Engineering Department, The S. M. Jones Company

Because the profit trend in oil production has been lower, attention has been focused on lifting costs, and the beam-pumping well has been pointed out as one reason for costly operations. Not only has beam pumping itself been under scrutiny but there has been a search for less expensive lifting methods. Considerable effort has been expended to develop new procedures—but in general they have been limited, and more often than not they have turned the producers' attention back to the soundness of the beam and bottom-hole-pump method.

The desire to reduce lifting costs either through a new method or through improvements in beam pumping has produced some very outstanding results. Improvements have been made by the introduction of modern methods in study, analysis and control of pumping operations—consequently there has been a considerable decrease in pumping costs where these modern methods have been used.

Modern beam pumping is no longer a case of flying blind without instruments and trusting to luck and circumstance. It has been demonstrated in many wells and in many fields that low lifting costs with beam pumping are possible through the use of control instruments in the hands of skilled, experienced men. The cost of this "fishing for facts" is incidental to the returns in saved production, labor and materials. Sucker-rod troubles are the clue to many inefficient operating conditions, and well studies can indicate the way: first, to a practical method of overcoming excessive rod breaks; second, to the reduction of high pumping costs due to inefficiencies in equipment and operation, and, third, an assurance of maximum return on new equipment in new fields.

Controlled Vertical Drilling Methods

By JAMES V. ROBINSON
Technical Oil Tool Corporation, Ltd.

A rude awakening on the subject of "crooked" holes and their consequences came with the advent of well surveying. It was followed by attempts by the more progressive drilling technologists to discover and initiate corrective practices. The early acid bottle sufficed to establish the connection between the uncontrolled use of drilling weight and crooked holes. The introduction of the weight indicator and precision deviation instruments provided the final basis for the establishment of the methods of modern controlled vertical drilling.

In both controlled directional drilling and controlled vertical drilling identical principles of control are utilized. The main factors are the influence of the pendulum force of the drill string under tension, and its flexing under compression. Blind drilling under excessive weight conditions is the usual original cause of deviation and is aggravated by undesirable physical forces that convert the drill stem from a plumb bob to a column with an overbalancing center of gravity, and change the concentric motion of the string to an eccentric motion bearing hardest on the "low-side" of the hole.

From a consideration of the physics involved it is apparent that a crooked hole is unavoidable when blind drilling is practiced. The technique of drilling which forestalls these adverse forces has both preventive and corrective aspects. Proper approach to the problem specifies two essentials:

First, the driller must be furnished equipment of type and condition suitable to the formations.

Second, he must have a precision deviation instrument.

Preventive controlled vertical drilling is most effectively practiced by holding deviation at all times below the critical angle. Below this inclination corrections are quickly made; beyond it, days of corrective drilling may be necessary. The critical angle is that at which the aggravating elements of instability, eccentric rotation, and lateral bit forces become established. It will vary with diameter of hole, center of gravity, and diameters along the drill stem. The practice of taking frequent deviation records is essential in all controlled vertical drilling work. More frequent readings are required in steeply-dipping formations than in flat-lying formations.

Locating Water Entries in Oil Wells by Electrical Means

By H. C. YARBROUGH
President, Yarbrough Guns Company

Conditions causing water to enter a well are many and varied. Constant study and experiment to develop a means to minimize water production that has led to the conception of many types of water-locating devices; some of a strictly mechanical nature, others of an electro-chemical principle, and still another type employing strictly electrical means.

Electrical devices for locating water are used under normal producing conditions in both cased and uncased holes to detect the exact elevation at which formation water is entering the well. The electro-chemical method is an application of the wet-cell principle to an oil well. A strong wet cell is made of the portion of the well to be tested by an even distribution of sufficient concentrated electrolyte to raise the potential value of the fluid to about four times what it would be under normal conditions. Lowering into the well of two dissimilar elements connected to a conductor cable, current set up between two submerged electrodes increases greatly when they enter the conditioned fluid and is measured at the surface.

Since the exact depth of the wet-cell elements is known at all times, it is possible to determine the exact point or points of water entry as voltage drops at the surface indicate passage of the elements through fluid diluted by water entry. An estimate of the volume of water entry may be made after successive runs. When properly conditioned all wells lend themselves to this type of investigation.

New Application of Chemistry to Oil and Gas Wells

By P. E. FITZGERALD
Dowell, Incorporated

Application of chemistry to oil production on a broad front is relatively new. The development of acidizing in 1932 proved that chemical research on oil production problems could produce tangible results. Consequently laboratories have been constructed solely for this type of research, and advancements, not only in acidizing, but in other fields related to oil production have come along ever since.

The formation of emulsions during and after acid treatment long has been a source of trouble for the treating engineer who had difficulty in getting his acid to react with the formation. Special acids with inhibiting and non-emulsifying components, solved this

problem. Heretofore the producer has been concerned with the emulsion of spent acid and oil produced after treatment. The addition of emulsion-breaking agents to suit the peculiarities of the oil solved this problem also. Formulation of a "sustained action" acid has increased the pentrative powers of the acidizing operation and brought thousands of barrels of otherwise unrecoverable oil to the pump.

One of the most important improvements made to acidizing has been the use of organic jellifying plugs to control the acid in the well. Gels are used to plug off or block up formations upon which acid action would be undesirable and divert the reagent to the zones where it will do the most good. The organic gels have found an application in the sealing of leaky packers in the West Texas area. Chemistry has made other cash-value contributions to the producing industry, among them a process for removal of paraffin from tubing and bore face and the utilization of an acid-soluble alloy as temporary casing. Definite beginning has been made upon what may well be chemistry's greatest aid to production; a solution that will effect a water-tight seal on the face of water-bearing formations.

High-Temperature High-Pressure Drilling Mud Filtration Tester

By D. H. LARSEN
Baroid Sales Department,
National Lead Company

The primary functions of a drilling fluid are to carry to the surface cuttings formed by the bit and to keep the walls of the bore and the fluids therein contained in place.

Much attention has been given to the problem of the permeability of cakes formed by the filtration of drilling muds. The amount of filtrate and the cake thickness obtained in a given filtration test bear a fixed ratio for the particular mud, fairly well independent of time and less so for temperature and pressure. The cake thickness and volume of filtrate are roughly proportional to the square root of the viscosity of the filtrate at the particular temperature.

The effective pressure at which a mud cake is laid down in a well is of course the difference between the hydrostatic head within the hole and the pressure of the fluid within the formation.

It is evident that the behavior of muds is not only different as temperature and pressure are increased, but that each mud presents a different case, and must be tested accordingly.

Development and Future Trend of Controlled Directional Drilling

By M. E. MONTROSE
Division Manager, Lane-Wells
Company, Houston, Texas

In the period prior to the use of scientific and technical equipment in the drilling of oil wells, holes were drilled with the greatest rapidity in a race to reach the oil sand. In many of these very wells, immediately following the flowing life, pumping problems became acute and lifting costs inconsistent among wells in the same field drilled at the same time. Also, offsetting wells drilled to similar measured depths for some unknown reason failed to reach the common oil sand.

It was not until later years and until the advent of the actual surveying of oil wells that the industry as a whole recognized the cause of the early inconsistencies. The earliest applications of directional drilling were sidetracking junk and straightening the hole. The first deflection tools were in the nature of a wedge. Now the commonly accepted deflecting tools for open holes are of two distinct types: the wedge-shaped type, or removable whipstock; and those employing the universal joint, better known as the knuckle joint.

For cased hole deflection work a wedge-shaped casing whipstock is used. The removable whipstock, as used in open hole for deflecting the course of the well, is a wedge-shaped tool.

The knuckle joint is a part of the drilling string at all times and acts in the place of a bit. The tool itself is a ball and socket type of universal joint with a self-actuating cam at the universal. The outstanding feature of the knuckle joint is its adaptability to all directional drilling problems.

Various applications of directional drilling are: sidetracking junk; straightening the hole; controlled directional drilling, which has a dozen separate applications.

Maintenance and Lubrication of Bearings in Oil Field Equipment

By S. M. WECKSTEIN
Chief Engineer, Industrial Division,
The Timken Roller Bearing Company

Proper bearing maintenance is essential to obtain maximum life and performance from equipment. The mounting of the bearing is made with the view in mind to permit of accessibility for proper maintenance, lubrication, inspection, assembly and disassembly.

The cost of maintenance is affected by the way the equipment is used. Improper handling and abuse by frequent overloadings shorten the life of the bearings and equipment. Regular inspection and lubrication schedules tend to prolong the life of the equipment.

Lubrication plays an important part due to the wide range of problems that are encountered. Various degrees of speed and load are involved. Wide temperature variations must be handled, and water, sand, and dirt further complicate the situation.

We probably will always have with us the man who says, "if a little is good, a lot is better." This is as great a fallacy in bearing lubrication as it is in medicine or anything else.

Squeeze Cementing Before Production to Reduce Gas/Oil Ratios

By R. S. KAIL
Baker Oil Tools, Inc.
Houston, Texas

For 28 years the principle selective exclusion of fluids in oil wells by squeezing cement against producing formation was confined to the exclusion of water. As far as I know, gas was first reduced in 1936 by the same means.

Squeeze cementing to eliminate high gas/oil ratios is more certainly accomplished, easy, simple, safer, and least expensive if the operation is performed before the well is initially produced.

Squeeze cementing before production to eliminate high gas/oil ratios should be effected on all wells that do not have some relatively impermeable cap more than three feet thick dividing the gas-bearing formation and the oil-bearing formation. Without this thickness, the gas evidently acts on the cement around the casing to reduce its effective strength, perhaps preventing any set whatsoever.

The most satisfactory planned operations were carried out in two fields with 48 squeeze operations on 44 wells.

To prevent any cement getting outside the tubing when using the cement retainer in conjunction with squeeze cementing, I suggest the application of sufficient pressure to the casing, before opening the valve in the circulation joint, that will surely raise the extra cement in the tubing. If nothing fails at this pressure, then open the tubing immediately above the retainer by lowering the circulation joint. The cement starts up and no cement gets outside the tubing. If sufficient pressure is not available, due to mechanical difficulties, the cement may set inside the tubing, but this is not comparable to leaving the tubing cemented in the well.

The cost of a squeeze job before production is about $850. This cost after completion (workover) is $3000 minimum, due to cost of killing the well, moving in equipment, and other expenses.

The Gun Perforator in Oil Well Drilling-Production Problems

By M. E. MONTROSE
Lane-Wells Company

While some of the mechanical requirements for a successful gun-perforator are realized the amount of research represented by electrical detonation of gun powder thousands of feet in the ground is not a matter of common comprehension.

While the gun perforator originally was developed to perforate casing opposite sand which had been passed up in drilling, it may be said that one of today's greatest applications in most areas is what is termed "selective completion." The economics of supply and demand make it necessary for the operator to be able to control the rate of withdrawal, the water-oil contact, and the gas/oil contact, in order that he may more scientifically produce his well and regain his investment. This is best accomplished by fully exploiting each formation after the gun perforator has made a test of the formation possible.

In addition there are several phases of gun-perforator operation that are not as well understood as "selective completion." They are: plug-back operations, or the perforation of possible productive strata before abandonment, perforating to improve or decrease gas/oil ratio, perforation of clogged screens to save removal and replacement, and the perforation of frozen casing or drill-pipe to reestablish circulation.

The addition of petroleum reserves made available through the application of the gun perforator is one of the most important developments in the producing industry in recent years.

Polar Core Orientation

By DWIGHT C. ROBERTS and
E. RAY WEBB
Sperry-Sun Well Surveying Company

The orientation of bore hole cores has long presented a problem to the oil and mining industries, which until recently could not be solved without considerable loss of time during drilling operations. Neither was it possible to orient cores after they had been removed from the hole until the advent of polar core orientation. It was first dis-

covered in 1927 that the residual polarity in sedimentary grains, if measured by an instrument of sufficient sensitivity, could be used to determine direction of formation dips and fault planes with a minimum of expense and effort. Since then this principle has been used in the construction of several instruments, and now has considerable commercial application. Under present practice the cores, chosen for simplicity of stratification, are marked and ground, and placed in a slowly rotating core holder which is operated in a magnetic field. The effect of the magnetic flux from the core upon the synthesized magnetic field produces a sine curve upon a sensitized drum that is rotated synchronously with the core. After the first complete rotation of the core direction is reversed and combination of the two curves obtained in this manner yields a resultant curve whose intersection with a horizontal reference line, interpreted in light of deflection survey data on the hole at the point from which the core was taken, determines direction and amount of the formation's dip and strike. As the industry becomes better acquainted with the advantages of polar core orientation it may become common practice in the solution of all problems involving determination of direction of formation dips and fault planes.

Application and Procedure of Controlled Directional Drilling

By C. P. COLLINS
Eastman Oil Well Survey Company

During the past few years the drilling of directional wells has increased in practice and significance wherever oil well drilling is undertaken. Controlled directional drilling usually falls into two general classifications: (1) The new location, which embodies such problems as the drilling of relief wells, the drilling of wells under inaccessible locations, and the drilling of multiple wells in offshore marine locations; and (2) the redrilling of wells, which embodies correction of drift and direction to prevent trespass, direct hole under salt dome overhang, direct hole to productive side of a fault, and to sidetrack lost tools and recomplete wells to known productive horizons.

Essential to controlled drilling operations is the use of well surveying instruments and proper interpretation of information gained therefrom. Two fundamental types of surveying instruments: the single-picture recording photographic instrument, and the multiple shot, or continuous recording type. Surveys are classified either as operative or informative; operative surveys being those run as the well is drilled, and informative surveys being those executed upon completion to obtain stratigraphic and structural positions.

When controlled drilling for corrective purposes is considered, a definite point in the hole must be selected as the plugging level for the first step in preparing the hole. It has been found that placing the cement in two stages of 100 feet each will make a plug that is better able to prevent the drill from breaking back into the original hole. The deflecting tool is lowered on the drill by one of several orienting methods. The use of special bits and various combinations of drill collar and reamer assemblies is essential to controlled drilling operation.

The Properties and Use of "Securaloy" As Applied to Oil Well Production

By O. HAMMER,
Security Engineering Company

Increased flexibility of well completion methods would be an aid in permitting oil production technique to be varied to meet specific present or unforeseen future requirements. An advancement toward this desired flexibility has been found in the adaptation of the properties of a recently developed metal known as "Securaloy." This metal is obtainable in the various pipe sizes as well as in the form of heavy wall extrusions, forgings, bar stock, and castings. It possesses mechanical properties which enable it to be fabricated into almost any shape with ample strength for subsurface use, but has the distinction of being readily drillable. The metal can be welded by either gas or arc methods, and in certain instances will retain a strength up to 90 percent that of the basic material.

Applications to drilling and production problems are numerous. Liners, liner hangers, packers, and various types of screens have been successfully made of "Securaloy." Combination of the drillable alloy with steel pipe to form a production string with drillable sections positioned at a predetermined location has proved practical. Recent development has been the use of "Securaloy" scabs, or sheaths, to blank off a portion of the screen perforations to alter the gas/oil ratio.

With few exceptions these drillable installations are run into the hole as if they were steel, but due to their light weight they can be handled with greater ease and smaller equipment. Although this material possesses adequate strength for its requirements it should be handled and run more carefully than steel. It cannot withstand the same vertical column loading and must be run slowly when tight spots are known to exist.

Reda Submergible Electrical Centrifugal Oil Well Pumping Units

By P. E. LOYE,
Reda Pump Company

The Reda pumping unit consists of a multi-stage centrifugal pump connected direct to a motor through a "protector" section; the entire assembly being of small diameter so that it may be run in small-bore wells. The unit is suspended on tubing in a manner similar to a working barrel with an electric cable extending from the surface to the pump. Close tolerances are maintained in all dimensions since the maximum horsepower must be developed in a minimum amount of space.

The protector contains a spring-backed piston, a grease chamber and an oil chamber and serves to equalize the pressure in the motor with the external pressure due to submergence in the well. The motor shaft and pump shaft are connected by splined couplings to a short shaft in the motor protector, so that the assembled unit consists of a single straight line rotating part with the motor rotors at one end and the pump impellers at the other, with no valves, gears, or reciprocating parts. Because of the close tolerances, the small diameter, the low moment of inertia involved, and the perfect balance of all running parts, wear is reduced to a minimum.

Motors are built in various sizes from 3½ to 112½ horsepower. A number of pumps of different sizes are made to fully cover the production possibilities in the various sizes of oil well casing in general use. Units have been successfully applied to all types of wells except those of the stripper class.

Some Defects Found in Hard-Faced Drilling Tools—and Their Remedies

By C. W. METZGER
Haynes Stellite Company
Houston, Texas

Shops manufacturing and repairing drilling tools, as well as the users of the tools, are interested in production of the best possible tools. A brief analysis of the "ideal" drilling tool shows the following requirements:

(a) Proper kind of steel for strength and ruggedness.

(b) Proper kind of steel as base metal for hard-facing materials.

(c) Properly shaped blades for easy penetration of formation, and drilling of straight, full-sized holes.

(d) Proper size circulation holes.

(e) Properly positioned tungsten carbide inserts, well bonded and strongly supported.

(f) Final hard-facing layer to resist wear between inserts and along cutting and reaming edges.

(g) Proper condition of steel portions of blades to offer maximum support.

In the conclusion, it is obvious that the commonest causes of defects in hard-faced drilling tools are the use of too much heat and failure to float off scale during various welding operations, and the cracking of tungsten carbide by quenching following the heat treating of the steel.

The Diesel in Oil Field Service

By O. D. TREIBER
Chief Engineer, Diesel Division,
Hercules Motor Corporation
Canton, Ohio

The Diesel engine offers the highest thermal efficiency of any fuel-burning prime mover. Its conception was based on the reasoning that the fuel burned under a boiler to produce steam for expansion in a cylinder should be burned in the cylinder itself and thereby save the latent heat of evaporating the water, since about one fourth of the heat in the fuel for a steam power plant is used to merely evaporate water into steam.

The Diesel engine burning its fuel in the cylinders eliminates the loss from latent heat of evaporating water for the steam engine.

The Diesel engine, igniting the fuel by the heat of compression, utilizes the law of nature wherein air when compressed becomes hot. If we compress the air we breathe, say at 60°, to 1/15 of its volume, the temperature is increased to 900°.

The Diesel engine usually has a compression ratio of about 15 to 1 where the pressure and temperature at the end of compression is about 500 pounds and 1000° respectively.

In a Diesel engine, only the air is compressed and the fuel has to be mixed with air in a short space of time. To merely inject the fuel into the combustion space is not enough. The high-speed Diesel engine has to have some mechanical means of mixing fuel with the air in the cylinder. This is the crux of Diesel engine design.

Pipe Line Meetings

Pipe line programs were held Tuesday morning and Tuesday afternoon, with most of the papers touching on the latest aspects of pump and pipe line operations. Care and maintenance of equipment were recognized as important factors in successful pipe-line operations. The discussions after papers were lively, and operators expressed keen appreciation of opinions based on operating facts.

L. F. Scherer, The Texas Pipe Line Company, was chairman of the Pipe Line Technical Program Committee; H. M. Stevenson, Humble Oil & Refining Company, was chairman Tuesday morning; and Walter F. Rogers, Gulf Oil Corporation, was chairman Tuesday afternoon.

Abstracts of papers presented, follow:

Trend in Pipe Line Practice

By WILLIAM G. HELTZEL
General Superintendent,
Stanolind Pipe Line Company

A review of the gathering system in the first part of the paper is followed by a resume of improvements in the trunk line.

This paper discusses (1) the elimination of tanks for checking field receipts; (2) advantageous use of portable-type pumping equipment; (3) design of high-pressure gathering station; (4) applications of semi-automatic stations; (5) trend in the use of various types of power; (6) the influence of proration on pipe-line gathering systems; (7) incidental suggestions; (8) the development of a "closed" pipe-line system; (9) use of meters for checking field receipts and dispatching purposes; (10) the application of orifice and venturi meters in pipe line operations; (11) progress in the modernization of trunk-line equipment; (12) an example demonstrates the advantageous use of devices and attachments; (13) a useful application of instruments; (14) trunk-line machinery; (15) character of new lines; (16) maintenance of lines.

In view of the means that are now available for draining lines, it is the author's opinion that repairs made by removing oil-soaked soil and replacing corroded sections of lines with good, coated pipe will in the long run prove the best and most economical policy. On the contrary, a maintenance program characterized by a patch-upon-patch method will have its day of reckoning.

A Practical Method of Arresting Pressure Surges in Discharge Piping of Reciprocating Pumps

By J. B. HARSHMAN
Master Mechanic,
Stanolind Pipe Line Company

Pressure surges in the discharge piping of reciprocating pumps has always been a troublesome problem in pipe line operations. Pressure surges exist in the discharge piping of any reciprocating pump. The intensity of these surges depend on (1) distance of manifold from pumps, or reflecting point in discharge piping; (2) design of manifold and discharge piping; (3) number of pumps operating in parallel; (4) flow characteristics of pumping equipment; (5) the pump impulses synchronized with the oscillation period of the discharge piping.

Tests indicate that serious disturbances in the pump discharge piping can be minimized by locating the manifold within 100 feet or less of the pumps.

The influence of the pumping equipment on pressure surges depends upon the type of pumps in use. The origin of pressure surges in pump-discharge piping is analogous to critical speeds in the shaft system of an engine.

Such devices as air chambers were developed for use on the discharge piping for protection against shocks; although effective in their application, the possibility of combustible mixtures offers a hazard from explosions.

The possible hazards, the inconvenience of charging and the expense of maintaining the air chambers influenced testing out another means which it was believed might serve this purpose. The first test was made using a 4-inch line inter-connecting the discharge lines of two 15,000-barrel capacity 24-inch duplex pumps. Although the 4-inch equalizer line had six right angle turns, its use reduced the range of pressure variation from 745 pounds to 95 pounds.

Maintenance of Portable Pipeline Field Pumping Units

By H. G. MOORE
Empire Pipe Line Company
Gladewater, Texas

Reciprocating, rotary, and centrifugal pumps are commonly used on portable units and are powered by either single-, or multiple-cylinder steam, gas, or gasoline engines; and by electric motors. The power is transmitted from engines or motors to pumps by shaft and coupling (direct connection), or by belts.

The present trend is to reciprocating pumps driven, or powered by multiple-cylinder engines. All field pumping units under 7000 pounds gross weight may be considered as portable.

Auxiliary equipment for portable pipe line field pumping units can be classed in three groups: accessory equipment, protective equipment, and safety equipment.

Magneto ignition is safer and more dependable than any other type of ignition system. Those equipped with impulse are easily started either by hand or electrical starter; such ignition also adapts itself easily to control apparatus. Trouble has been experienced with some of the later model magnetos on account of condensation inside the magneto.

Upper-cylinder lubricators help to prevent loss of compression caused by sticking piston rings and by burning and sticking of valves.

All portable units have movable and stationary parts. Breakage is negligible where units are operated under conditions for which they are designed. Leakage of crude and lube oils is costly and should be prevented by repairs. Leaks occurring from packing breaks, and gaskets can and should be prevented by immediate repairs.

Only two grades of oil are necessary for the proper lubrication of these pumping unit engines—either S.A.E. 10 or 20, and S.A.E. 30, which is filtered on each unit continuously and changed at about 100 hours.

Location and Installation of Ground Beds

By D. F. BALL
United Gas Pipe Line Company

One of the first items to be considered is the proper instruments to be used in making tests. Some of the methods used in the past, such as direct current in which a reliable source of direct current is necessary, means that a considerable amount of equipment must be transported. The results thus obtained are not always reliable, due to effects of polarization at the test rods, and stray currents that may be flowing in the vicinity.

The alternating current ammeter voltmeter method is not feasible, since alternating current often is not available.

Another method much used, and with considerable success is the Shepherd Canes, in which a millimeter is calibrated directly in ohms per c. c.

Recent developments by several companies have indicated that it is seldom necessary to place ground beds to extreme distances from the pipe line, and in most cases a distance of 200 feet is ample.

If it seems unlikely that a good contact can be obtained between the pipe and soil, it may be salted or treated with calcium chloride.

System of Records Maintained to Combat Pipe Line Corrosion

By FRANK E. HANGS
The Texas Pipe Line Company

The necessity of an adequate system of records in a program to reduce corrosion damage is self-evident. Unless such records are kept over a period no satisfactory measure of the damage corrosion is effecting on underground structures is available. Without records the effectiveness of protective devices cannot be checked, the potential "hot-spots" cannot be watched.

Comprehensive records should start with information concerning the terrain and property ownership crossed by the line. Certain soil characteristics and topographical features should be recorded. Sand, clay, alkali, dry washes, etc., should be located by plus stations. It is important that the line be marked at convenient intervals so that leaks and local difficulties can be accurately located. Original data concerning leaks, local reconditioning, etc., should be reported immediately to the recorder. A few months after protective devices have been installed, information as to their effectiveness should be available. A chart is made for each individual section of the line, and a brief history is entered upon the chart for ready reference.

The policy in past years has been to re-condition a whole section of line between two stations. Casual inspection of one of these charts reveals that leaks are not uniformly distributed but are localized. Clearly, the areas, which need re-conditioning are those revealed by the chart as "hot-spots", and no others. When the number of cathodic units becomes large it is advantageous to keep a running account of each unit in concise form, showing type of unit;

when and where installed; and periodic voltage and amperage readings.

A comprehensive system of corrosion records is an indispensable aid to any pipe-line corrosion program. It facilitates effective planning, execution, and, thereby, many economies.

Method of Determining Whether Electrical Protection Should Be Applied to Pipe Line or Whether the Line Should Be Reconditioned

By D. B. GOOD
The Texas-Empire Pipe Line Company

The subject has been divided into separate parts, which are classified as follows:

First, as to locations where leakage or deterioration of pipe by corrosion has already been experienced or evidenced.

Second, as to locations of pipe or metal wherein no actual pits or leaks have yet been noted but where the occurrence of same would be exceedingly expensive and difficult to repair, and where damages would likely be excessive.

The problem of existing lines where leaks or deterioration of pipe or metal by corrosion has already been experienced or evidenced, constitutes in general the most frequently occurring situation for consideration to determine whether a reconditioning program is in order or whether electrical means can or should be applied for keeping the line in operation or service.

In conclusion, it is believed that the method of applying electrical protection for the mitigation of corrosion of underground structures should in all cases be considered prior to any extensive reconditioning program.

Operation of Cathodic Protection Units On High Pressure Gas Lines

By DAVID HARRELL
Houston Pipe Line Company

So far as we know there are only three practical sources of power for the application of direct currents to pipe lines to protect them electrically. These are (1) rectified alternating current for the power mains, (2) a prime mover driving a D. C. generator, and (3) some form of battery.

The Houston Pipe Line Company has been applying cathodic protection to pipe lines since 1934, and at present we are in a position to say that we believe we have several systems that do the work. The most outstanding of these is a gas-engine-driven unit that has been in operation since 1935 and is still running fine. In all, we have the folllowing types of units in operation:

1. Rectox unit from power line.
2. Motor generator set.
3. Gas-engine-driven generator.
4. Wind-powered unit, using storage battery.
5. Rotary engine driving generator.

All the results seem to indicate that electrical protection is practical, efficient and economical on gas mains, be they coated or not, but it must be continuously maintained. If allowed to slump the leaks show up again and the progressive leak curve will follow its original course unless protection is reinstated on the section involved.

Export Session

Problems of shipping, crating, documentation and insuring for export shipment of oil field equipment and supplies, as well as a forecast of probable markets for American-made oil field supplies, featured the meeting of the exposition's export committee, held in the Music Hall of the convention building the afternoon of April 24, with O. D. Small, Portable Rig Company, Houston, serving as chairman, and Thos. E. Ward, president of Oilfield Equipment Company, New York, introducing the various speakers.

Following are brief abstracts of some of the papers presented:

Prospects for the Sale Abroad of American Oil Producing and Refining Equipment.

By PAUL L. HOPPER
Petroleum and Coal Section, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Hopper's paper, presented by William V. Gross, foreign editor of THE OIL WEEKLY, showed how American exports of oil field equipment had practically quadrupled since 1934. He gave figures supporting the statement that over 60 percent of total oil field equipment exports are going to Venezuela, Netherlands West Indies, Colombia, Netherlands East Indies, Trinidad and Iran. Venezuela is the greatest buyer, the others following in the order named.

Hopper then discussed briefly each producing country likely to have a bearing on sale of American equipment abroad. In discussing the various parts of the world one tenor of thought seemed to be outstanding: that there is a marked tendency toward increase in subsidies by governments lacking sufficient domestic production, particularly those whose current and immediately pending military needs render increase in domestic output more or less imperative.

Packing and Documentation on Foreign Shipments

By J. R. ASTON, Traffic Manager
Lykes Brothers Steamship Company
Houston

In the field of exports of competitive manufacturers of similar products, several of which will suit any given foreign field requirement, those who know their shipping are likely to secure a majority of the export business. If a buyer instructs you to segregate certain items in one or more packages, do not fail to comply with this detail as unquestionably an important reason exists for such instructions. If the buyer does not specify the character of or any distribution in packing, it is up to your judgment. If you are in doubt, consult someone in your industry who does know from experience. Steamship companies do not specify packing requirements, and they will accept a shipment so long as it is sufficiently packed for ordinary handling to port of discharge. But the manufacturer is further interested in the shipment being sufficiently well packed to withstand the rough handling beyond the port of discharge to the interior warehouse or jungle drilling site. It is advisable to reinforce heavy hardwood boxes or crates with strong metal stripping.

Heavy lift shipments of the type not practicable to crate or pack should be routed to shipside to connect with the steamer's sailing date to eliminate demurrage. Any parts of such heavy lift equipment which could be damaged in shipment should be protected with wooden, wired burlap, or other suitable housing. This precaution also should be observed in shipping certain types of threaded pipe.

Quality products, good salesmanship and good packing are absolutely thrown out the window sometimes in export business by careless documentation. Occasionally shipments have been seized by foreign customs, fined and involved in court litigation because of faulty preparation of documents. Aston followed these thoughts with detailed do's and don'ts on documentation of F.A.S. and C.I.F. shipments, discussing such things as shipping marks, packing lists, commercial invoices, and distribution of commercial invoices and packing lists.

Marine Insurance

By ROBERT BLAINE
Tucker Blaine Insurance Company
Houston

You should know, gentlemen, that you are dealing with the oldest form of insurance. My advice to those of you interested in purchasing cargo insurance is to select carefully your marine insurance adviser. Give him all the material facts surrounding the shipment and let him arrange the proper insurance. A marine insurance policy is probably more flexible than any of the insurance contracts and can be "custom made" to fit your particular requirements. Arrange for an open policy of insurance which will give automatic insurance, world wide, on all shipments.

Remember that a basic marine policy will protect you against loss should the vessel be stranded, sunk, or burned, on fire or in a general collision, and that recompenses will be made on the basis of an average general loss.

Aerial Transportation for the Oil Industry

By PORTER NORRIS, District Manager
Pan American Airways, Houston

The oil business in Mexico supplied the "shot in the arm" necessary to put over the Pan American in early days. "It appears that the air lines follow the oil development in this world of ours today," he said.

Norris then told of a certain degree of reciprocity for the business the aviation industry is getting from the oil industry. "One of the 18 air lines in the United States has contracted this year for 8,000,000 gallons of high-octane gasoline. A few years ago planes seldom carried over 400 gallons. The new clipper ships carry 4200 gallons."

Maracaibo is only 30 hours from Houston, Barranquilla, Colombia, only 29, Talara, Peru, 72 hours, and Trinidad, 48 hours. It is only 5½ days to Buenos Aires.

Engineers Limited (the organization

which is building the 290-mile line from the Barco concession in Colombia to Covenas) had moved over 400 men to Colombia by plane. "They didn't move these men by air because it was faster, but because in dollars and cents it was cheaper." But, illustrating the saving in time, he related how a Houston manufacturer had sent a shipment of tools to Talara by plane in 3¼ days. By steamer it would have taken several weeks.

Possibilities of Developing Commercial Production in China

By TSIN-LON OUANG
Chinese Vice Consul in Houston

The largest oil areas in China, such as Shensi, Szechuan, Siking and Sinkiang, are not in areas controlled by Japan. Ouang said he felt quite sure these areas never would be controlled by Japan. He said Chinese policy toward oil development had been that of government development but recalled that the policy in other lines of business had been to permit foreign investment up to 49 percent.

Ouang told the meeting not to worry about the scare of exhausting reserves in the United States, saying China would welcome development of her oil resources by Americans. He referred to early attempts by Standard Oil Company of New York to develop production in the Shensi area, a campaign which resulted in drilling 7 wells, none of which went below 1000 meters. Later, and at a point not far from the above failures, Chinese technicians completed several productive wells of uncertain commercial value.

One of our main problems, he said, is that of finances. Black gold under the ground cannot come out by itself; some yellow gold must be put in in order to draw it out. Then, too, China is in need of men with practical experience as well as drilling and transportation equipment. She has begun to try to remedy the need for technical men by sending students to the United States.

Ouang concluded with the remarks: "There is much to learn from the United States where the oil industry has reached such an advanced stage. The relations between our two countries are the best. I hope that you, the leaders of the industry, will give us your advice and assistance whenever the occasion may present itself."

Foreign Banquet

Germany, Roumania, Poland, Mexico, Canada, England, Trinidad, Venezuela, Italy, India, Bahrein Island, Saudi Arabia and other countries were represented by delegates at the banquet tendered visitors from abroad April 26 in the Rice hotel in Houston by directors of the Oil-World Exposition.

Ray Dudley, president of The Gulf Publishing Company and an official of the exposition, served as toastmaster and called on each of the visitors for a short talk. Practically all responded, making the occasion one of the highlights of the fellowship gestures which characterized the week's gathering.

John R. Suman gave the address of welcome, and at the end of introduction of the visitors George Hill, Jr., president of Houston Oil Company and a vice president of the exposition, invited the visitors back for later expositions.

Honorable Edward Ashley of London, son of Lord Hastings, who is touring the United States as a prelude to entering the Parliament, was the only foreign visitor seated at the speakers' table. He referred to himself as a true internationalist at heart.

Among the following visitors. listed by countries, will be found those who made short talks at the banquet:

Venezuela: W. E. Gray, superintendent, Standard Oil Company of Venezuela; C. Homer McDuff, drilling superintendent of the same company; L. J. Alleman, National Supply Corporation; C. R. Summers, Mission Manufacturing Company; Karl Daniels, Shell Petroleum Company; R. B. Cunningham, drilling superintendent for Shell; A. N. Walp, drilling superintendent for the Caribbean Petroleum Company; W. H. Lyne, Jr., field superintendent, Pantepec Oil Company.

J. C. Gordon, assistant chief petroleum engineer, Standard Oil of Venezuela; J. G. Coultrup, petroleum engineer, Lago Petroleum Corporation; W. D. Sorrells, petroleum engineer for the same corporation; L. J. Beckmann, geologist for the Lago corporation; H. T. Reynolds, driller for the Caribbean Petroleum Company; J. W. Watts, material superviser, Standard Oil of Venezuela.

L. H. J. Hersch, superintendent, Caribbean Petroleum Company; John S. Bailey, production superintendent, Standard Oil of Venezuela; and V. W. Fletcher, storekeeper, Caribbean Petroleum Company.

Trinidad, British West Indies: Harry W. Smith, drilling superintendent, R. J. Gaul, engineer, G. C. Semmens, engineer, and R. G. Bennett, driller, of the Trinidad Leaseholds, Inc.; O. L. Garrett, manager of the G. D. Sales Company; George A. Foster, driller, Kern Trinidad Oilfields Company; J. E. Douglas, foreign representative, A-1 Bit Company; W. Lee McKenzie, sales department, Hughes Tool Company, Trinidad branch; and A. J. Ruthven Murray, general manager, Kern Trinidad Oilfields, Ltd.

England: Alexander Ivanoff, sales engineer, and G. P. E. Howard, director, Hayward-Tyler & Co., Ltd., London; Hon. Edward Ashley; H. E. Slaymaker, English consul at Galveston, and Harold Gray, Reed Roller Bit Company, London; and Leslie Derfton.

Canada: H. E. Denton, production superintendent; W. L. Parker, comptroller; E. S. Holmes, pilot, and Roy Will, general superintendent, Anglo-Canadian Oil Company, Alberta; Walter Mueller, president, Mueller Machine Works, Calgary, Alberta; Kenneth J. Clarke, metallurgist, International Nickel Company, Toronto; M. R. King, Reed Roller Bit Company, Calgary; and J. G. Spratt, assistant manager, Anglo-Canadian Oil Company, Calgary.

Roumania: A. A. Pamula, Colombia Oil Company, Moreni; P. A. Bouvier, refinery manager, Colombia Oil Company, Ploesti; T. R. Nitescu, general field superintendent, Concordia Oil Company, Ploesti.

Bahrein Island, Persian Gulf: C. E. Davis, manager of production, Bahrein Petroleum Company, Awali; and W. A. Stenman, driller, Cal-Tex Oil Company, Awali.

Germany: Harry von Rautenkranz, managing director, Itag-Heinberg Company, Celle; and Anton Graf, chief geophysicist, Askania-Werke Company, Berlin.

Mexico: Juan de la Garza Cardenas, drilling superintendent, Poza Rica; Alfonso Barnetche, petroleum engineer, Mexico City; L. P. Rossi, gas engineer, Poza Rica; Paul Rodriguez, gas engineer, Puerto Mexico; and Francisco Inguan, petroleum engineer, Mexico City, Petroles Mexicanos; E. Morend, superintendent of pipe line and construction, Mexican Gulf Oil Company, Tampico; Alfonso Lopez, petroleum engineer, administration of petroleum, Mexico City; I. B. Sutton, president, General Machine and Supply Company, Tampico; Gilbert Davies, manager, Consolidated Oil Well Company, Tampico; and Adolfo Roldan, administrator, Petroleros y Perforadores Mexicanos, Mexico City.

Italy: Luigi Nassano, vice consul of Italy in Houston.

Poland: Jacob Schmer, president of the Jacob Schmer Company, Lipinki-Kryg.

Holland: J. A. Smits, equipment engineer, Bataafsche Petroleum Mij, The Hague; and J. J. Arps, petroleum engineer, Shell Oil Company, The Hague.

China: Tsin-Lon Ouang, vice consul of China in Houston.

India: R. A. Bruce, drilling superintendent, Assam Oil Company, Ltd., Digboi, Upper Assam, India.

Arabia: H. B. Williams, driller, California Arabian Standard Oil Company, Al Khobar, Sandi Arabia.

Safety

Safety programs were featured at Friday's sessions, with an interesting array of talks, papers and demonstrations. The realistic and spectacular nature of the demonstrations attracted wide interest.

"Safety Meetings from Field Men's Viewpoint," by R. M. Bradbury, Houston Oil Company; "Oil Field Fleet Operations," by M. E. Brock, Gulf Oil Corporation; and demonstrations of the rescue of workmen who go into tanks and enclosed places, by S. E. Whiting, Liberty Mutual Insurance Company, were included on the morning session.

Whiting enlivened his demonstration by titling it, "Men Who Go Down to Their Death in Tanks." He used six men on the stage and showed how to resuscitate victims of asphyxiation.

J. J. Forbes, U. S. Bureau of Mines, spoke Friday afternoon on the value of safety work. G. M. Kintz, also of

the U. S. Bureau of Mines, gave demonstrations on petroleum fires, gases, explosions and permissible equipment.

A. A. Nicholson, personnel manager of The Texas Company, New York City, delivered an interesting talk at the Friday evening session on "Is Industry at the End of the Road?" Nicholson is a strong orator.

Presentation of trophies and medals to the petroleum industry employees who saved lives of their fellow workmen by first aid and rescue methods concluded the program Friday evening.

Elizabeth Davis, who saved the life of her brother by dragging him to safety after he had been overcome by poison gas, was presented a large plaque by C. J. Rutland, president of Texas Safety Association. The 41 men who saved lives during the year were presented medals by J. H. Brown, Tide Water Associated Oil Company, New York City.

T. S. Maffitt, Jr., safety manager for Houston Oil Company, was chairman at the morning session; P. E. Keegan, manager personnel and employment, Shell Petroleum Corporation, Houston, presided at the afternoon session; and C. A. Miller, assistant personnel manager, The Texas Company, was chairman at the evening session.

Rice scholar wins student contest

Robert S. Cooke of Rice Institute, Houston, was awarded first prize in the student contest conducted by the drilling and production committee of the Oil-World Exposition. He won over 13 other contestants. Cooke's subject was on soil analysis.

Three hundred dollars in prizes was distributed among eight top ranking contestants. Students from Tulsa University, Oklahoma A. & M. College, Oklahoma University, University of Texas, Texas A. & M. College, Southern Methodist University, Louisiana State University and Rice Institute participated.

Second place winner was Rudolph Bodemuller of the University of Texas. Third prize went to U. W. Small of Texas A. & M. College. John D. Wisenbaker, Southern Methodist University, carried off fourth place honors.

E. B. Carruthers, Texas A. & M. College, was awarded fifth position by the three judges. Next came R. Murph Jones of Rice Institute, while Alfred H. Paessler, University of Texas, won the seventh prize. The eighth winner was E. H. Parker, Oklahoma A. & M. College.

Court upholds labor board Pure Oil ruling

The Fifth United States Circuit Court of Appeals at New Orleans April 24 called for enforcement of an order of the National Labor Relations Board, prohibiting Pure Oil Company from organizing a company union at its Port Neches, Texas, refinery.

The labor board had ordered the company to cease and desist from interfering with Port Neches employees' activities in the Oil Workers International Union, C. I.O. affiliate.

Monopoly investigation

[*Continued from page 40*]

charged, have been confined to independents. "That," he contended, "simply means that the independent operator is the only one who has been sufficiently investigated to determine whether he is a violator."

"Hot" oil no longer is a problem, in East Texas because of efficient state supervision, and the Connally Act is no longer needed there. But there are possibilities of excess oil in the South Texas, South Louisiana and other new flush fields, where no permits are required and where because the fields are largely under the control of major operators, there is no way of securing accurate figures without investigation, Glass testified.

"If federal tender board regulations are necessary anywhere," he said, "they would be more necessary in those flush pools on the coast of Louisiana. Yet," he added, "the interior department has not attempted to operate in any other field, largely," he suggested, because, "the big oil companies wouldn't permit it."

"There are more independent operators in East Texas than anywhere else in the world," he said. "It is the only place where the major companies needed any help from the federal government.

"The major companies only want it enforced in East Texas and it is enforced only in East Texas because the major companies want it there."

Glass challenged the independence of the Independent Petroleum Association and declared that while Russell Brown, in supporting the legislation, represented associations in many states "where the Connally law does not apply and they know nothing about it," he could not speak for the East Texas independents. The association has only a small membership in that field, he continued.

"Probably the most important major oil company lobby in Washington exists in the Interior Department," he charged, pointing out that officials of the petroleum conservation division had urged enactment of conservation laws in California, Michigan and other states.

"I cannot see where it can possibly be the duty of a federal official, with public funds, to engage in any kind of a lobby on the state legislatures."

Attacking the "economy of scarcity" philosophy which he declared was basic in the Connally bills and other aids given the oil industry by the Federal Government, Paul E. Hadlick, counsel for the National Oil Marketers' Association, charged that as a result the independent interests in the various branches of the industry are being squeezed out of the picture by the integrated companies.

Quoting at length from testimony taken during the Madison trial, Hadlick asserted that defense witnesses "admitted that the conspiracy to raise prices, for which they were found guilty, was conceived, planned and held ready for execution back in January and February, 1935. All the conspirators were waiting for was word that Congress had enacted the Connally Act, and that the Department of Interior had set up machinery for its enforcement."

"You would find most interesting the testimony of many witnesses at the Madison trials as to the aid given by the Connally Act and the interstate compact in the fixing of prices for petroleum products," he said. "Some of those witnesses should be brought before your committee by subpoena and the evidence taken at first hand."

Amendment of the act providing for the confiscation of all profits in excess of six percent per annum made by all persons engaged in the production, sale or refining of crude oil and for the fixing of the price of crude by the government was recommended by Clarence Schock, Mt. Joy, Pennsylvania, in a brief filed on behalf of the Independent Petroleum Jobbers Association of Pennsylvania.

Schock's brief, largely repeating the arguments he has presented at past hearings, argued that if conservation is aimed at, the law should prohibit the movement of any oil from states which fail to adopt conservation, and that the ideal law would forbid production of crude in excess of orders for immediate shipment but would place no limit on the amount that any producer may take from any well.

Bids for Socony-Vacuum 355-mile line received

Contractors' bids for the construction of Socony-Vacuum Oil Company's 10-inch carrier to extend from Mitchell staion, near Wood River, across Illinois and Indiana to Lima, Ohio, were filed late last week, and awards will be made early this week. J. L. Latimer of Dallas, vice president and general manager of Magnolia Pipe Line Company, a subsidiary, is in charge of the new propject, which will involve about 355 miles of trunk line. Authorization of the line was made public early in April. It is scheduled to be completed by August 1, with a maximum capacity of 40,000 barrels daily.

The carrier is being built primarily to supply crude to Socony-Vacuum Oil Company's refineries at Trenton, near Detroit, and Buffalo, New York. Crude produced and purchased in Oklahoma by Magnolia Petroleum Company will be routed via Sinclair Refining Company's system to Mitchell station. An 11-mile 10-inch line will be built south from the new carrier near Patoka station, Illinois, to Sandoval, where connection will be made with Magnolia Petroleum Company's gathering system in the Salem-Lake Centralia district. Other lateral lines are due to be built in the Illinois basin.

Contracts have been awarded for the immediate construction of two 80,000 barrel tanks at Patoka station, and two 55,000-barrel tanks at Mitchell station.

Shell planning early work on new West Texas line

Shell Pipe Line Corporation is expected to soon authorize construction of a 30-mile, 6-inch crude line, 12,000 barrels daily capacity, to extend from the Wasson and Bennett areas, Yoakum County, to Hobbs, New Mexico, where connection will be made with its 8-inch trunk line. Right-of-way survey for the project was made early last February when the single line that serves the two fields adopted pipe line proration and refused new well connections because of a capacity load.

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WEEK'S DRILLING HIGHLIGHTS

Wyoming

Completion last week of the largest producer on record in the Rocky Mountain region extended the proved area of the Lance Creek field, in eastern Wyoming one quarter mile to the south. The record well, which is gauged at around 12,000 barrels daily wide open through casing, is Minnelusa Oil Corporation's H & M 3 on Lease 5, NW NE SE 7-35n-65w.

South Texas

South Texas discovery ratio showed a spurt last week. Two new fields were opened in Jim Wells County, while a new sand in the same county converted a small pool into an important reserve. A new sand was opened in the King field and another pool opened to make two scores for Nueces County. Jackson County's 8000-foot discovery, deepest in South Texas, made some water with first oil flow and was being reworked.

New Cockfield sand field is being opened in Duval County, while Webb and Zapata counties each apparently are finding a new oil field.

Rio Grande deep wildcatting shows increase.

Kansas

Interest was heightened by a well in Hittle pool, Cowley County, rating 17,508 barrels daily, three pool extensions in Rice County, in addition to extensions for pools in Stafford, Russell and Rooks Counties. Eleven wildcats were staked.

Comparison of Permits Granted for New Wells

STATE	Week Ending April 29	Total this Mo.	Total this Year	Total this Date Last Year	1938 Year Total
Arkansas	5	16	64	81	247
California	8	80	336	421	1,146
Louisiana	25	68	348	419	1,214
Kansas	18	90	406	561	1,453
Michigan	28	96	357	221	953
Oklaloma	44	163	647	696	1,978
Texas	282	871	3,592	4,769	12,369
Total	410	1,384	5,750	7,168	19 360

* Not available: approximately 23.

Texas Gulf Coast

Aldine, Harris County, looms as the district's next field, 1660 feet of 38 gravity oil having been recovered on a drill stem test at 6815 feet. Caplen, Galveston County, got a shallower sand at 7148 feet. Ace, Polk County, chalked up the second Wilcox producer. A mile east of production at Turtle Bay, Chambers County, an outpost was completed for 366 barrels.

South Louisiana

A Wilcox project on Pike's Peak prospect, Pointe Coupee Parish, is running 300 feet high. Casing was set preparatory to a production test of a new sand found a mile northeast of Golden Meadows production. Pine Alley, a geophysical prospect in St. Martin Parish, reports a wildcat running 100 feet high. Attempts are still being made to obtain a satisfactory completion of the East St. Bernard discovery well. Sixty feet of new sand is said to have been cored at Woodlawn, Jefferson Davis Parish.

New Mexico

The Milne sand area in Roosevelt County that has been holding interest for a number of weeks reveals an igneous formation that apparently is granite and the end of hopes for Ordovician oil production.

Arkansas

A wildcat in LaFayette County has filled a 100-barrel tank with oil from the Glen Rose and is shut in awaiting more tankage.

Oklahoma

Little River, Seminole County, chalked up a ¾-mile extension Wilcox producer. Cromwell sand production in Searight pool was extended by a 90-barrel well. Dutcher sand furnished a ¾-mile extension for Okfuskee, Okfuskee County. Attractive completions are expanding work in Ramsey and Coyle pools.

Indiana

Spencer County's first oil well, a Barlow lime producer, was completed after a shot of nitro; it is 2 miles northeast of Enterprise. A wildcat in Columbia Township, Gibson County, is swabbing 20 barrels an hour from McClosky lime.

West Texas

Masterson shallow pool's first deep test appears in line for successful completion as a high-gravity producer from Ordovician lime; this Pecos County prospective discovery on the north flank of the Fort Stockton high missed the Simpson. Slaughter, Hockley County, got major extensions southwest and northwest.

Summary of Wells Completed in the United States Week Ending April 29, 1939

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1939	Total This Date 1938
Alabama	....	....	....	....	.....	1	1
Arkansas	8	7	....	1	4,654	75	78
California	22	19	....	3	11,240	350	391
Colorado	....	....	....	....	.....	9	4
Florida	....	....	....	....	.....	....	....
Illinois	54	47	....	7	13,577	1,219	274
Indiana	3	....	1	2	.....	41	35
Kansas	25	19	....	6	20,663	391	624
Kentucky	12	3	....	9	90	207	227
Louisiana	29	21	1	7	5,497	323	348
Michigan	23	15	....	8	9,545	388	258
Mississippi	....	....	....	....	.....	1	8
Montana	....	....	....	....	.....	35	20
Nebraska	....	....	....	....	.....	....	....
New Mexico	11	9	....	2	4,680	201	180
New York	7*	7*	....	....	26	160*	245*
Ohio	12	2	5	5	28	251	311
Oklahoma	39	23	3	13	7,258	627	716
Pennsylvania	28*	24*	3	1	38	406*	811*
Texas	195	151	3	41	97,892	3,218	4,368
Utah	....	....	....	....	.....	....	....
West Virginia	8	1	7	....	5	161	272
Wyoming	1	1	....	....	2,470	48	32
Total this week	477	349	23	105	177,663	8,112	9,203†
Total last week	446	301	26	119	136,486	7,635	8,567†
Total this year	8,112	5,586	555	1,971	9,005,190	....	.....

* Includes water-input wells. † Includes one Tennessee completion.

Oklahoma Fields

Little River extension well flows 520 barrels in 16 hours.

Work expands in Ramsey and Coyle pools as areas extend.

Tulsa.—Oklahoma activity the past week was largely confined in testing of new pay zones of older areas, an extension test for Little River pool swabbing 520 barrels in 16 hours, and Ramsey pool, Payne County, completing its twenty-sixth producer for a flowing potential of 4720 barrels daily.

Seminole County contributed a ¾-mile west extension for Little River pool as Atlantic Refining Company et al's Jimmy 1, SE NW NE 21-7n-6e, was swabbing 30 to 35 barrels per hour from Wilcox sand bottomed at 4417 feet. Pumping equipment is being installed. Fish pool has a new producer in the recently developed dolomitic zone at The Texas Company's Eliza 2, SE NE SE 19-7n-8e, west edge of pool, flowing 560 barrels in 21 hours through tubing, 330 barrels through casing in 12 hours with an initial potential of 936 barrels daily. The new horizon is Simpson dolomite with hole drilled to 4141 feet. Cromwell pay for the same county in Searight area was extended as C. L. McMahon's Haight 1, C N½ NE NE 34-10n-6e, topped the saturated sand zone at 3796 feet and drilled to 3811 feet. On a 9-hour swabbing test it made 90 barrels. H. S. Moss' Haight 1, C S½ NE NE 34-10n-6e, missed the pay horizon and was drilling below 4000 feet seeking Hunton lime. Same operator was building rig for a Cromwell extension test in Harjo 1, C N½ SW NE 34-10n-6e, being a west offset to the discovery well which flowed 908 barrels daily through a 1/16-inch choke, oil being 40.5-gravity.

Okfuskee County

Hyer et al's Kirchner 1, SE SW NW 10-13-10e, Okfuskee County and ¾-mile east of Okfuskee pool, found good Dutcher sand pay from 2678 to 2685 feet. Hole was squibbed and cleaned out at which the test flowed 143 barrels over a 24-hour period. West of this producer, Beal has made location for Beidleman 1, SWc NE NE 8-13n-10e, a Wilcox sand test with the Dutcher being a prospective upper zone. A wildcat for the county moving in rotary is Phillips Petroleum Company et al's Lemar 1, C SW NE 3-11n-9e, northwest of Okemah.

Initial commercial production from Dutcher sand was also had in Creek County as Dunn et al's Anthis 1, NWc SE SE 34-14n-10e, East Tuskogee pool, flowed 100 barrels daily from 2651 to 2665 feet. A revival for the old area has been under way for some time, the past week noted by 12 new starts.

Ramsey and Coyle Expanding

Both Ramsey and Coyle pools, Payne County, were expanding with Ramsey getting its twenty-sixth oil well in Mid-Continent Petroleum Corporation et al's Columbia 6, SW NW NW 18-18n-2e, which flowed 220 barrels during the first hour, 173 the second and same for third and 152 the fourth hour for a daily potential of 4720 barrels, accompanied by 2,500,000 cubic feet of gas. Saturated Wilcox sand was topped at 4804 feet and drilled to 4834 feet. The new completion proves production to the southwest, thereby requiring two direct offsets and one diagonal offset. Same company's Columbia 7, NEc SW 18-18n-2e, was drilling below 3945 feet and Ramsey 10, NE SE NW 18-18n-2e, drilling below 4450 feet. Outside of the community block, E. H. Moore et al's Gulliam 1, SW NW NE 18-18n-2e, set surface pipe at 916 feet and was drilling below 1000 feet. Three completions for Coyle pool are near as The Texas Company's J. S. Graham 1, C E½ NE SE 11-17n-1e, flowed 40 barrels in 10 hours while drilling from 4905 to 4918 feet in Wilcox sand. Operators will deepen slightly before final completion. Same company's L. M. Graham 1, C W½ SW SW 12-17-1e, was preparing to drill in Simpson dolomite at 4832 feet. Magnolia Petroleum Company's Cain 2, C E½ NE SE 12-17n-1e, had hole bottomed at 4820 feet and was bailing before drilling plugs.

Shawnee pool, Pottawatomie County, had a sand producer in Yorkan Production Company et al's Williams 1, SE NE NE 6-10n-4e, south edge of pool, as in 28 hours the well flowed 620 barrels of 36-gravity oil. Sand was had from 4437 to 4439 feet but operators will deepen before running tubing to complete the well. Same company's Williams 2, NEc 6-10n-4e, was spudding with a machine and Sauter 1, SEc 31-11n-4e, was rigging up rotary.

Oswalt discovery, Love County, has its second test, Sinclair Prairie Oil Company's Stockton 2, NEc SW 26-6s-2w, in saturated Deese sand topped at 6773 feet at which depth 7-inch casing was landed and drilling proceeded to 6884 feet.

Olsen Oil Company et al's White 1, C NE NE 30-11n-1e, Newalla discovery in southeastern Oklahoma County, has been flowing 200 to 275 barrels of cut oil daily from Hunton lime at 6000 to 6100 feet, after plugging back from dry Wilcox sand. Kerr-Lynn Oil Company et al's Olmstead 1, C E½ SE NW 12-14n-3w, north of Edmond, was drilling below 5865 feet.

Discovery well on Cruse structure, Phillips Petroleum Company's Culbertson 1, NWc SE 4-1n-5w, after cleaning out to 5605 feet, (total depth 5619 feet) made 150 barrels on a 24-hour test.

Washita County's deep test, Continental Oil Company's Proctor 1, C NW 28-10n-20w, was drilling near 11,100 feet, only 300 feet from a depth record in the state. Another deep test scheduled for the area is Helmerich & Payne's Horms 1-A, C NW NE 6-10n-16w, a twin well to one drilled by Washita Oil & Gas Company a year ago which resulted in a lost hole at 4130 feet after showing some oil in granite wash.

Oklahoma Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Beckham—		
McLaughlin et al, Durham 1, c sw 36-8n-24w	*	2017
Caddo—		
Nichols, Rigney 3, ne nw se 12-5n-9w	144	3838
Creek—		
Burke-Greis, Vanderslice 1, nec se 30-14n-7e	¶4	2885
Midco, Parris 1, sec sw 6-16n-10e (pb 2837 ft)	*	3205
Doke et al, Taylor 1, nw nw sw nw 18-17n-11e	¶4	2211
Gled, Escoe 10, nw sw se 27-18n-8e	2	2628
Robbins et al, Noble 2, sw ne nw 25-18n-8e	32	2620
Harris, Green 1-A, sec nw 15-19n-7e	30	2718
Kay—		
Bradley, Davidson 1-A, nw ne nw nw 15-29n-1e	*	3478
Lincoln—		
Allied Material, Laffoon 3, ne sw ne 9-13n-6e	60	4230
Hubble et al, Teter 1-A, se sw ne 9-14n-6e	15	3191
Mudge Oil Co., Maddox 2, nec se 9-14n-6e	80	3170
Mudge, Dowell 3, se sw ne 10-14n-6e	Abnd.	Lcn.
Helmerich & Payne, Kenworthy 3, ne nw sw 14-14n-6e	5	2982
Wilcox, State 4, ne nw ne 16-14n-6e	380	3142
Wilcox, State 2, ne sw se 16-14n-6e	228	3086
Muskogee—		
Penbrook, Turner 1, nw nw sw nw 14-13n-16e	Abnd.	Lcn.
Petroleum, Scott 1, se se sw sw 14-13n-19e	*	845
Parks, Hilderbrand 1, ne ne nw ne 20-14n-19e	*	1359
Okfuskee—		
Pine, Canard 1, nw se sw 12-10n-11e	*	2155
Blankenburg, Ireland 1, nw se sw 10-13n-10e	Abnd.	Lcn.
Oklahoma—		
I. T. I. O., Joyce 4, sw ne ne 25-11n-3w	148	4061
Okmulgee—		
Horner, Smoot 1A, ne nec nw 22-16n-12e	Abnd.	Lcn.
Pontotoc—		
Patsy, Bates 2, ne nw sw 26-2n-7e	3080	3970
Union, Abbott 1A, sw nw ne 34-3n-6e	*	4150
Sinclair Prairie, Starrett "B" 5, nwc ne 21-5n-5e	55	2643
Barber, Mount 6, se sw nw nw 36-5n-7e	*	2283
Farmers Mutual, Fidler 1, swc se 4-5n-5e	Abnd.	Lcn.
Waite 1, nwc ne 9-5n-5e	25	2720
Pottawatomie—		
Denver P&R, Tarter 1, se nw ne 2-6n-4e	683	4150
Palmer, Poppan 1A, se sw se 16-7n-4e	*	2400
Campbell, Bruno 1, nw se se 31-7n-5e	433	4096
Delaney, Bruno 2, sw ne se 31-7n-5e	395	4125
Seminole—		
Cooper, Cosar 1, se nw sw 12-6n-5e	204	2837
Sunray, Reed 1, sw ne sw 12-6n-5e	20	2807
Patterson et al, Johnson 1, nw sw sw 27-6n-5e	235	2753
Hall et al, Dameron 2, sw nw sw 3-6n-6e	¶8	2861
Smith et al, Smith "B" 1, ne nw ne 20-7n-6e	*	4272
Malernee, West 2, sw se nw 33-7n-6e	60	2978
Smith, Yarhola 1, se ne sw 2-8n-6e	*	4150
Texas Co., Eliza 2, se nw se 19-7n-8e	936	4141
Halco, Spencer 1-A, nw nw se nw 19-8n-8e	*	1638
Tulsa—		
Vinsel, Watson 1-A, sw sw ne nw 2-17n-12e	8	1293
arten et al, Hurd 1, nw nw ne sw 8-18n-14e	*	1362

* Failures; † Junked; ¶ Million cu. ft. gas.

Kansas Field Developments

Hittle pool well rates 17,508-barrel potential.

Extensions recorded for three Rice County areas.

Wichita.—Field activity during the past week increased considerably with a gusher outpost well for Hittle Pool, Cowley County, rating 17,508 barrels daily, three pools in Rice County extended and Stafford, Russell and Rooks counties getting pool extensions. Eleven wildcats were staked in various counties.

Draws Four Offsets

Barnett-Connley's Waite 1, NW NE SW 21-31s-4e, west Hittle pool record well, drew four offsets for immediate drilling. A north offset to the strike is Cities Service Oil Company's Waite 1, SE SW NW 21-31-4e. Arthur Brewer has staked Hughes 1, SEc NW SE 20-31-4e, a quarter mile west and a location south. Hartman and Blair have staked location in NW NE SW 21-31-4e as an east offset. A west offset was McKnab and Blair's Waite 1, NEc NW 28-31-4e, one-half mile south of the gusher.

Kansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton—		
Gulf, Dolecheck 1, c n½ ne sw 24-16-12w	*	3400
Central Petroleum et al, Miller 1, se sw se 17-16-13w	*	3448
Amerada, Merten 1, c nw nw 14-19-15w (pb 3393 ft)	437	3470
Stanolind, Schartz 10, c n½ sw 2-20-11w	354	3312
Broderick, Sell 1, nwc sw 17-20-11w	957	3289
Hollow, J. Kowalsky 1, sec ne 18-20-11w	4457	3306
Cowley—		
McKnab, Hittle 1, sw ne ne 21-31-4e	3524	3391
Ellsworth—		
Cities Service et al, Schroeder "A" 5, se nwc sw 29-17-9w	928	3232
Greenwood—		
Hart et al, Johnson 31, sec nw 23-24-12e	3	1696
Oko O&G, Lovett McNeil 12, nw ne se sw 22-23-13e	25	1590
Kingman—		
Skelly, Miles "E" 1, ne sw nw 29-27-10w	309	3439
McPherson—		
H&M, Lagree 1, c nw nw 31-19-1w	626	2967
Bennett et al, Suffield 1, nw sec 25-19-2w	159	2970
Rice—		
Spurrier et al, Carey 1, ne nw nw 30-18-8w	*	1680
Rose, Hathaway 1-A, sec nw 24-19-10w	1037	3309
Davis, Keesling 1, sec sw 10-20-9w	725	3232
Texon, Peterman 3, se sw se 10-20-9w (salt water disposal well)		4035
Rooks—		
Phillips, Tanzey 1, c nw sw 25-8-18w (previously temp abnd)	84	3424
Rush—		
Morgan et al, Herbert 1, c w½ sw 25-18-16w	280	3550
Russell—		
Texon, Bunker Hill 1, swc nw 26-14-13w	3615	2940
Shaffer, Cramm 4, ne nw sw 11-14-15w (otd 3076 ft)	24	3218
Western Kansas O&R, Kell 1, ne nw nw 6-15-13w	*	3176
Mid-Continent, Ochs 2, cwl nw se ne 35-15-14w	1144	3360
Sedgwick—		
Ace, Black 1, nw se ne 21-25-1e	1975	2280
Stafford—		
Stanolind, Siefks "B" 4, nec nw 3-22-12w	*	3627
E. H. Moore, Secrest 1, c s½ se nw 21-25-11w	*	3165

* Failures; † Junked; ¶ Million cu. ft. gas.

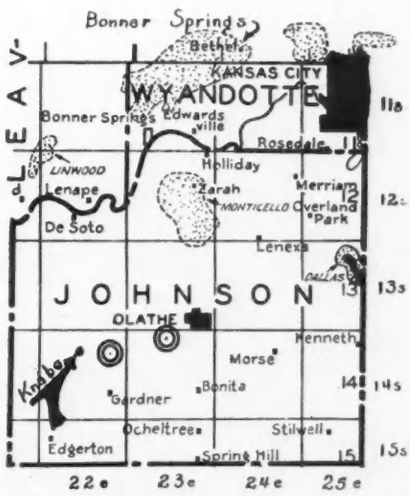
Rice County was in the pace with the Campbell pool getting extensions to the northeast and south with a good show for an extension to the northwest. George Hinkle's Truesdall 1, NWc 34-19-9w, one-half mile northeast of Campbell pool, had a hole full of oil after drilling to 3000 feet in Lansing lime. C. H. Weaver et al's Peterson 1, C NL 4-20-9w, one-half mile south of Campbell pool, filled 100 feet with oil after topping Arbuckle lime at 3233 feet and drilled to 3260 feet. Eight inch casing was set at 2377 feet and five-inch at 3235 feet. Operators will accidize before testing. Gulf Oil Corporation's Charles 1, SEc SW 28-19-9w, one-quarter mile northwest of Campbell pool, topped saturated and porous Arbuckle lime at 3207 feet and bottomed at 3212 feet. Upper shows were had in Kansas City-Lansing lime group. Geneseo pool, Rice County, was extended two locations southward as Sinclair Prairie Oil Company's Smith 1, NE SE NE 1-19-8w, filled 3000 feet with oil from Arbuckle lime at 3265 feet.

Rattlesnake pool, Stafford County, looks good for a 1¼-mile extension to the southeast as Lauch and Moncrief's McConnaughley 1, SWc 18-24-13w, drilled 112 feet of saturated Kansas City-Lansing lime in six successive zones, top of pay being 3591 feet with first saturation at 3672 feet. The hole was carried to Arbuckle lime with nothing showing, lime being topped at 4211 feet and drilled to a total depth of 4233 feet. Five inch casing was set to test the Lansing show.

Layton Extended

Broadview Oil Company's Beardmore 1, NW SE SW 2-9-16w, one mile north of Layton pool, Rooks County, filled 700 feet with oil from Kansas City-Lansing group at 3210 feet. The pay will be acidized after an initial test has been made.

Production west of Balta North pool, Russell County, was had as Phillips Petroleum Company's Antherton 1, C NE SE 30-13-14w, in 8 hours filled the hole 2500 feet with oil after drilling plug to 3323 feet in Arbuckle lime. Gorham sand was found productive in a previous extension for Allon pool as Vernon Oil and Gas Company's Olson 1-B, NEc 28-14-14w, had 1000 feet of oil in the hole after drilling to 3224 feet in Gorham sand topped at 3212 feet. On a 7 hour swabbing test it showed for 34 barrels with some water, part of this fluid coming from Lansing lime at 3066 to 3075 feet, where production was estimated at 30 barrels per day.



—E. C. Jacobson, Maps; Tulsa

Continental Oil Company's Putnam A-1, C W½ NW 23-9-21w, which recently doubled the area of Morel pool, Graham County, after topping Arbuckle lime at 3739 feet and drilled to a total depth of 3805 feet, earned a potential of 1609 barrels daily. Seven inch casing was set at 3794 feet.

A noticeable increase in wildcatting the past week was evident with 11 stakes driven. Ellsworth County had two in I. W. Murfin's Libie 1, NW SE 28-16-10w, 1¼ miles southwest of Stoltenberg pool. A wildcat one mile north of Stumps pool was staked in Gulf Oil Corporation's Janssen 1, SWc 29-17-10w.

Shaffer and Smith have made location for Cooper 1, SWc 9-13-11w, 12 miles northeast of production in Bunker Hill pool, an area of active exploration, although little oil production. Transwestern Oil Company's Anna Claire 1, NW NE 4-18-10w, half mile east of Stumps pool, Rice County, was staked. A wildcat failure for the same county was Phillips Petroleum Company's Newbold 1, SEc NE 2-19-9w, northeast of Campbell-Cramm area, abandoned in Arbuckle lime topped at 3428 feet and bottomed at 3445 feet.

Chase County had a start in Alex W. McCoy's Arnold 1, SE NW NE 29-22-6e, off the flank of the granite ridge and 7 miles southeast of Florence pool, nearest production.

Continental Oil Company has staked location for Sanders 1, NW SE 12-25-13w, one quarter mile east of Leesburgh pool, Stafford County. A test at the north end of Hugoton gas field, Grant County, was under way in Kuhn Brothers Drilling Company's McCall 1, C 21-28-36w.

Amerada Petroleum Corporation's Gagelman 1, C NE NE 23-19-15w, was a location one mile south of the discovery well in Kruckenberg pool, Barton County.

A test scheduled for Arbuckle lime in Johnson County, northeast Kansas, is being completed as a producer in Bartlesville sand to revive the east-Kansas shallow trend and to spur present activity in Forest City Basin. The test is OK Supply Company's Knabe 1, C NE NW 15-14-22e, southwest of Olathe on the edge of the Basin.

Originally staked as an Arbuckle test, the well drilled through a thin sand at 728 feet where it was estimated good for 5 barrels per day of low-gravity crude. The hole was deepened to 830 feet, where Bartlesville was topped, showing slight saturation. At 857 feet, with the last 2 feet highly saturated, pay was shot with 40 quarts. The well initially flowed over the casing but settled down to an estimated 35 barrels to 50 barrels per day. The crude is of 29 gravity, somewhat higher than average gravity of shoestring production to the southwest but 2 degrees lower than an eastern Miami County field's

production. Although gas pressure was light in the test, crude rose 60 feet above the pay.

Operators plan to make a completion of the test at its present depth and to make location for another well to the Arbuckle. Two prior wells have been drilled to deeper formations in the county, each being in the vicinity of Knabe 1. Universal Oil Company's Harrington 1, NEc SW 12-14-22e, found Arbuckle carrying only a trace of oil at a top of 1598 feet and drilled 21 feet of granite to 2421 feet. Mahaffie 1, 4-14-23e, found Arbuckle dry at 1565 feet and completed as a dry hole at 1785 feet.

Surface in the vicinity is middle Pennsylvanian, with Lansing exposed in valleys and deep cuts. Other possible pays are Peru, Oswego, Squirrel, Shoestring, sub-Bartlesville, Burgess, Wilcox and Arbuckle. Dallas field on the east edge of the county, with a section of production extending into Missouri, produces from Bartlesville at 500 feet, being located on the high extending south from Kansas City. Although most of the Dallas production is gas, a number of wells were completed for oil. Bonner Springs, at the north edge of the county, produces chiefly gas but shows of oil have been obtained. Linwood and Monticello are both gas fields producing from shallow zones.

Being located on the edge of Forest City Basin, Knabe 1 has been closely followed, and showing as it has gives impetus to adjacent development as well as control in future drilling.

Across the line in Clay County, Missouri, Hopper's Black 1, C NWc 36-52n-32w, a Forest City Basin test, found 200,000 cubic feet of gas in Wayside sand at 377 feet and picked up a showing of oil. This gas volume is greater than that usually found in shallow drilling in the area, average volumes being less than 50,000 cubic feet. This test is shut in at present.

Three locations bolster Arizona wildcat campaign

Phoenix, Ariz. — Three locations in two counties swelled Arizona's total attempts to nine and provided the state with its first full-fledged wildcat campaign. Yuma Valley Oil & Gas Company has erected standard rig in southern Yuma County, 7s-14w, and spudded. The first and only other hole in the county, on NW 4-8s-13w, was abandoned at 2360 feet despite a high-temperature gradient, shows of gas, and an absence of igenous rock.

Two locations have been staked in Maricopa County, one at Arlington, the other near Glendale. Two other tests in the county are shut down, one contemplating abandonment at 1200 feet, the other waiting on casing at 762 feet.

Funk Benevolent Corporation Fee 1, SE NE 27-13s-30e, was coring ahead at 6550 feet after encountering shows of oil at close intervals for 92 feet. 4¾-inch casing was set at 6448 feet to effect a successful formation shut-off.

Yavapai County operations were confined to the setting of 30 feet of 22-inch conductor pipe on Ari-Copa Drilling & Mining Company's Puntenney 1, SE SW 27-18n-2w. Chino Valley Oil Development Company's State 1, NE SW 20-18n-2w, was waiting on casing at 790 feet, close to the possibly productive Devonian.

Illinois Developments

Lake Centralia-Salem production extended 2½ miles. Gallatin County wildcat flows; 50 miles from production.

Olney, Ill.—Arthur "Tex" Harvey et al's Salem Building & Loan 1, C N½ NE SE 33-3n-2e, Tonti Township, 2½ miles north of the Lake Centralia-Salem pool, started flowing 200 barrels of oil and 25 barrels of salt water from the McClosky, topped at 2161 feet, with bottom at 2180 feet. It opens a new Marion County pool on a small structure.

Coates et al's (Zeppa & Fields') Dr. E. A. Green 2 (Green 1A), SE SE SE 17-9s-9e, Gold Hill Township, Gallatin County, 50 miles from production, started flowing by heads at the rate of 125 barrels a day through 7-inch casing, promising the state's first Waltersburg sand pool. Twenty-five feet of saturation was found in that formation, topped at 1767 feet. Bottom is at 1794 feet. The wildcat is the second try on a lease that yielded a dry hole when drilled to the St. Louis at 2700 feet. Two locations were announced in the area for immediate drilling.

Also in Gallatin County, Bailey & Lucas' Dr. H. Logan 1, SE NE NE 21-8s-8e, North Fork Township, cored a slight saturation below 2850 feet, but on examination of the core operators decided to deepen another 75 feet.

Attracting attention as the state's deepest hole, the Kingwood Oil Company's McWhorter 1, C E½ SE NW 15-6n-6e, Effingham County, was drilling in a hard formation at 6040 feet. Started in the summer of 1938, the wildcat was abandoned as dry at 5823 feet late last year. A rotary was moved in several weeks ago to deepen to the St. Peter, comparable to the Wilcox in Oklahoma.

The recently opened Cordes pool of Washington County continued to hold the development spotlight, although a test southeast of the discovery, American Seismograph Company's Kosuszek 1, Section 23-3s-3w, was abandoned as dry during the week. A south outpost was found dry a week ago, indicating the limits in that general direction are probably defined.

American Seismograph Company's West 1, Section 15-3s-3w, promised a ½-mile northerly extension to the pool when it recovered Benoist saturation. Casing was set to 1294 feet. A. W. Hutching's Chapman 1, NW NW SE 35-3s-3w, 2½ miles southeast of the present limits, was preparing to drill plugs. Operator said casing was set only after core analysis indicated a commercial well would result. Ten feet of saturation was cored below 1290 feet.

With no regulations covering well spacing or offset drilling, numerous tests have been drilled in various parts of the Illinois basin on school and church lots, abandoned roadways and other small tracts overlooked by major leasers. Several such wells have resulted in pool openers, while others were drilled on leases obtained only after nearby acreage was proven productive. The Texas Company has paid fancy prices for small tracts located in the center of its blocks in the Lake Centralia-Salem pool, while other companies have been forced to do likewise in other areas.

The payoff, however, seems to involve a single cemetery lot, measuring 3 feet by 8 feet, in the Cordes pool. Drilling arrangements had been practically completed by H. A. Hamilton, formerly of Muskogee, Oklahoma, who holds the lot on which a Civil War veteran is buried. The body will be disinterred for re-burial elsewhere. In Section 27-3s-3w, it is in the center of a block controlled by Ohio Oil Company.

Two wildcat tests in Bonpas Township, Richland County, far removed from production in the "deep" part of the Basin area, were attracting attention. Kingwood Oil Company's Eli Provines 1, SE SE SW 3-2n-14w, was making rapid progress and at last report was at 2900 feet, with an estimated 200 feet or less to go. Rockwood and Leathers' Amos Yonaka 1, Section 22-2n-14w, started several months ago

Illinois Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Pure, Priestman 1A	688	3110
Priestman 2A	971	3102
Clinton County—		
Shell, Criley 3A	38	1220
Criley 6A	30	1229
Iroquois O&G Co., Kaelin 2	45	1388
Ed Kaelin 3	45	1383
Effingham County—		
Kingwood Oil Co., Koester 1	*	2566
Fayette County—		
Carter Oil Co., McClain 4	1200	1580
La Verne Deal 2	240	1533
La Verne Deal 3	550	1480
J. H. Devore 1	164	1535
W. Holley 2	368	1586
Richard Larimore 7	402	1456
Alma McKay 1	219	1591
Alma McKay 2	148	1591
Matson Reed 5	1344	1456
O. C. Wood 1	492	1595
Dixie Oil Co., Arnold 4B	200	1540
Jarvis Bros., Homan 8B	250	1579
Maybee Drilling Co., Homan 5	175	1607
Gallatin County—		
Miller et al, Big Barn 1A	*	346
Jasper County—		
Kingwood-Bur-Kan, Harrison 1	*	2711
Lawrence County—		
Joe Kesl et al, Anna Jones 1	*	1701
Macon County—		
Snake Hill Dev. Co., Dipper 1	*	2125
Marion County—		
Texas Co., E. Jett 8	175	1842
E. Jett 11	160	1845
M. Johnson 2	203	1890
F. Shanafelt 3	133	1871
F. Shanafelt 1	125	1858
F. Shanafelt 4	168	1884
T. Stroup 1	105	1875
T. Stroup 3	160	2040
W. M. Stroup 4	280	1781
J. F. Canull 10	294	1774
E. Tate 7	280	1774
K. Wayman 6	469	1732
D. Buckley 2	314	1908
D. Buckley 4	182	1889
T. L. Easley 4	210	1921
McConnaughhay 1B	200	1835
S. Parker 5	175	1885
S. Shereshoveck 3	280	1822
B. Hawkins 5	84	1791
B. Hawkins 6	84	1790
L. Hawthorne 4	112	1869
Frontier O&G Co., School Tract 2	975	2058
Mammoth P&R Corp., Siebel 3	55	2110
Rock Hill Oil Co., Foster 13	150	1920
Harvey et al, Salem Building & Loan 1	200	2180
Richland County—		
Pure, Wakefield 8	119	2594
Wabash County—		
Renwar Oil Co. & Longhorn, Helm 1	*	3058
Washington County—		
Manitou Pet. Co., Oak Grove Cemetery 1	205	1288
Wayne County—		
Roche & Voyles, W. H. Jewell 1	*	3301
Texas Co., Lyons 5	111	3346

* Failures; † Junked; ¶ Million cu. ft. gas.

and which recovered four feet of McClosky saturation, was preparing to complete as high waters slowly receded from Bonpas Creek. Bottom was at 3052 feet. Acid treatment will be given just as soon as truck can be moved to the well.

Kentucky Fields

Sun abandons important McClosky lime wildcat

Owensboro, Ky.—Sun Oil Company's Mrs. William Hoge 1, 3 miles east of Henderson, Henderson County, was abandoned as dry at 2451 feet in the McClosky lime. H. & H. Drilling Company was contractor for the wildcat.

The first anniversary last week of the Birk City oil field, which was marked by the bringing in of Hoosier Drilling Company's C. T. Blackwell 1 as the state's first McClosky lime flowing well, saw considerable Western Kentucky interest focused on a near completion

Kentucky Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Butler County—		
Ellison, Baxter 1	*	595
Wilson & Co., Clements 2	*	931
Christian County—		
A. J. Morton, Jr., J. Collins 1	*	400
Daviess County—		
Hupp et al, Reno 1	*	1543
Hancock County—		
Flesher et al, Cal Young 1	*	765
Henderson County—		
C. A. C. Oil Co., Ruggles 1	*	2048
Phillips Pet. Co., Sheffer 1	*	4689
Lee County—		
Keath & Co., Steele 6	50	....
McLean County—		
South Penn Oil Co., Kirtley 7	25	1625
Ohio County—		
Thrasher & White, Crowe 4	*	638
Teller, Hoover 3	*	1387
Powell County—		
Joe T. Brown, Lowery 3	15	....

Pennsylvania Completions

BRADFORD DISTRICT

R. E. Hungiville No. 2, 299-300 Bing	2	....
Messer Oil Corp., Redfield	5	....
Forest Oil Corp., 2 wells	2	....
Forest Petroleum Corp., 4 wells	4	....
Niagara Oil Corp., 2 wells	2	....
2 wells	2	....
Bradford Transit Co., 9 wells	9	....
Butler-Armstrong District		
Smith Bros., Reott	*	....
Middle District		
A. V. Clinger, Payden	10	....
Pontiac Oil Co., Pontiac Oil Co.	1	....
S. Y. Ramage, Jr., Henderson	1	....
New York-Pennsylvania: Gas Field		
Penn York, Lena Barnes No. 2	¶	....
Fayette County—		
Nollem Oil & Gas Co., Manyak	¶.05	1162
Washington County—		
McFadden & Co., Reed 1	¶.08	1165

New York Completions

Allegany County—		
Sawyer & DeFusto, Davidson farm, Bolivar	8	1270
Max Andrews, Burdick farm, Wirt	3	1339
Martin O'Connor Est., O'Connor farm, Genesee	5	1362
Bradford Prod. Corp., Lot 8, Genesee	6	1395
Karl-Weller Oil Corp., Swarthout farm, Genesee	4	1372
Allegany: Water Intake Wells		
Bliven Hill Oil Co., Norton farm, Scio	...	986
H. W. Patterson et al, Ockerman farm, Scio	...	969
Cam Oil Co., Peavy farm, Genesee	...	1358

* Failures; † Junked; ¶ Million cu. ft. gas.

across the Ohio river in Spencer County, Indiana. Damron Brothers, Owensboro operators, appeared near successful completion of a Barlow lime test which promised production between 100 and 150 barrels a day. Three miles west of here, it is believed to open a pool that extends across the river into Kentucky.

Phillips Petroleum Company obtained its first production east of the Mississippi River in 15 years last week when Shearn Coal Company 1, near Belton, Muhlenberg County, showed 400 feet of oil in the hole when plugs were drilled to 6½ feet of saturation. The well, bottomed in the McClosky at 1528 feet, offsets Fred Phillips' Shearn Coal Company 1, a recent pool opener. Phillips Petroleum Company's well was being prepared for acid treatment. Fred Phillips' Shearn Coal Company 4 was drilling at 1060 feet.

Major Oil Company's West 1, in the Birk City pool, was being plugged back from 1924 to 1890 feet and was to be re-acidized. Acid treatment at the lower level, in the McClosky lime, resulted in water breaking through. It is in Daviess County.

Sun Oil Company erected derrick for Pritchett 1, near its George Trigg lease where two good McClosky wells were recently completed, the first opening a new Henderson County pool. First oil was moved from the area last week by Fordsville Gathering Lines, Inc.

High water continues to retard development in low sections of western Kentucky, but rivers were steadily receding and favorable weather during the week was drying up fields and roads.

Indiana Developments

Spencer County's first oil well flows 27 barrels daily

Evansville, Ind.—Frank Damron et al's Cora Niles 1, NE NW NE 2-8s-7w, Luce Township, became Spencer County's first commercial oil well when it produced 27 barrels of oil natural from the Barlow lime. It was given a shot with 30 quarts of nitro and was to be placed on the pump late in the week. Operators predicted a 100- to 150-barrel well.

The wildcat is on a 40-acre tract about 2 miles northeast of Enterprise, near the Ohio river; 6½ feet of saturation was topped at 1404 feet.

After an electrical test revealed insufficient porosity in the Mansfield to make a well, R. E. Moore and Earl Ford announced abandoning G. Steinkamp 1, wildcat in SE NW 5-7s-11w, Vanderburgh County, at 1799 feet. The Mansfield showed some saturation from 1020 to 1030 feet and was tested after the Waltersburg sand was found dry. Elevation was 399 feet.

Also abandoned was Dr. J. M. Glazier's Huffnagel 1, NE NE 7-7s-11w, ¾-mile from Steinkamp 1, which was drilled to 1910 feet.

After being shut down at 3057 feet for the greater part of the winter, Mid-West Development Corporation's Perry F. Jackson 1, NW NE Donation 54-3n-9w, Palmyra Township, Knox County, was preparing to resume drilling.

Mid-West Development Corporation's Louis A. Wirth 1, NE SW NE 15-2s-9w, Columbia Township, Gibson County, was swabbing 20 barrels an hour after a second acid treatment of the McClosky. Watched as a possible new pool opener, it is at an elevation of 419 feet, topped the Glen Dean at 1179 feet, Golconda at 1260 feet, and McClosky at 1610 feet. Bottom is at 1619 feet.

Failing to make a well in the McClosky, W. F. Lacy's Cooper 1, in the new Griffin pool, set casing to the Cypress sand where 27 feet of saturation had been passed through. The Cypress was topped at 2501 feet. High water was delaying completion. The well is ¾-mile southeast of the discovery, good for over 1000 barrels a day from the McClosky.

Indiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Dubois County—		
Fred Phillips, Hammer 1	*	1050
Orange County—		
R. S. Hayes, Baker 1A	*	3226
Spencer County—		
W. W. Damron, Wright 1	¶5	894

* Failures; † Junked; ¶ Million cu. ft. gas.

Gas purification plant building in West Virginia

United Fuel Gas Company, Charleston, West Virginia, has entered into an agreement with The Girdler Corporation, Louisville, Kentucky, for the erection of a gas purification plant in Kanawha County, West Virginia. This plant, which has a capacity of 15 million feet of gas per day, will remove H_2S from sour natural gas which will then be distributed for domestic and industrial use.

Construction of the plant will be carried out by J. F. Pritchard and Company of Kansas City, Missouri. The plant is expected to go into operation early this summer.

West Virginia Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Calhoun County—		
South Penn Oil Co., Brannon 4	¶.25	2246
Clay County—		
Thompson Gas Co., Thompson L. & C. Co. 12	¶.66	2241
Gilmer County—		
Weekley et al, Turner 1	5	1695
Kanawha County—		
Columbian Carbon Co., Landers 1	¶2.82	5030
L. M. Fields 1	¶2.84	5090
Ten Mile O&G Co., Dickinson 20	¶.25	2592
Lincoln County—		
Adkins, Lovejoy 1	¶.22	3550
Ritchie County—		
McBurney et al, Farley Heirs 2	¶.37	2208

Ohio Completions

Athens County—		
Sperry O&G Co., Poston 2	¶.20	519
Guernsey County—		
W. R. Corey, Hall 1	*	1438
Licking County—		
C. Davis, W. Frethey 1	¶2.50	2570
Willey et al, H. Van Wey 1	¶.50	2545
C. R. Settles, Livingston 1	20	860
Shrider et al, Stradley 1	*	681
Meigs County—		
T. J. Chase, Mills 2	*	788
Perry County—		
Corning Prod. Co., Ketchum 1	¶.45	3857
Ohio Fuel Gas Co., Fouts 1	*	3854
Washington County—		
Ohio Fuel Gas Co., Cullen 1	*	1395
J. E. Duncan et al, Baker et al 1	¶.17	1760
E. W. Parks et al, Martin 1	8	1715

* Failures; † Junked; ¶ Million cu. ft. gas.

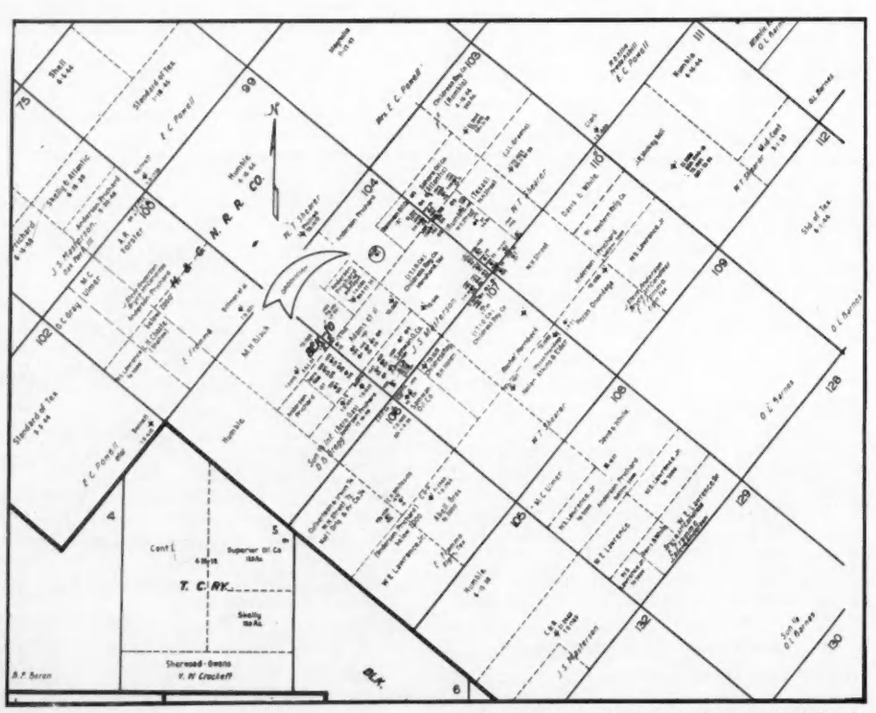
West Texas Fields

Pecos County deep test indicates oil in Ordovician. Slaughter field production gets two major extensions.

San Angelo, Texas.—Preliminary production test given the first deep project for the Masterson shallow pool, northern Pecos County, points to the completion of a high-gravity-oil producer from the Ordovician at a level that compares in depth with routine completions from the Permian in West Texas. The prospective discovery is on the northeast flank of the Fort Stockton high, which has been recognized by geologists for decades as an unusual structural condition that lies in the form of a crescent across northeastern Pecos County.

Anderson-Prichard Oil Corporation and Monte Warner's Masterson 1, C S¼ N¼ H&GN Section 104, Block 10, provided a distinct surprise in reaching the Ellenberger limestone member of the Ordovician at 4554 feet after logging only 10 feet of detrital formation and missing the Simpson section. Favorable porosity was logged at 4545-70 feet and 4580-90 feet in coring to 4595 feet, or 2170 feet subsea. Formation tester used with packer at 4640 feet yielded 720 feet of fluid, estimated 50 percent oil. Second test with packer at 4548 feet showed 420 feet of fluid, estimated 75 to 90 percent 37-40 gravity oil and the remainder drilling mud. The gas volume was rated 95,000 feet. Seven-inch pipe was then landed at 4542 feet, using 155 sacks of cement.

Two previous Ordovician failures in northern Pecos County encountered an abnormally thick section of Simpson, which was missed by Masterson 1. Magnolia Petroleum Company and Tex-Mex Petroleum Corporation's McKee 1-a, H&GN Section 24, Block 9, situated 10½ miles due north of the prospective producer gave promise of making an oil producer from the upper Simpson, which was topped at 4775 feet, with an elevation of 2385 feet. Deeper drilling established a 1327-foot section of Simpson, and sulphur water was found in Ellenberger, logged at 6102-6267 feet. Humble Oil & Refining Company's White-Baker 1, C NE T C Ry Section 44, Block Z, near the Yates field terminus of the Fort Stockton high, established a district record in logging a 1345-foot section of Simpson, topped at 8040 feet, with an elevation of 2715 feet. Ellenberger at 9385-9811 feet also was void of oil or gas production. Roxana Petroleum Corporation and Kirby Petroleum Company's University 1, SW NE Section 23, Block 26, located 9½ miles south by west of Masterson 1, logged the Permian-Pennsylvanian contact between 4662-80 feet, with an elevation of 2620 feet, and quit in hard granite at 5204 feet.



—Map by Southwest Mapping Company, Fort Worth.

The northern Pecos County sector of the Fort Stockton high has an oil producer from the Ordovician in process of completion that gives promise of becoming the most important discovery in West Texas since 1937. Preliminary production test given Anderson-Prichard Oil Corporation and Monte Warner's Masterson 1, first deep test for the Masterson pool, indicated by arrow, proved the Ellenberger limestone at 4550-95 feet for high-gravity oil.

Exploration of the deep formations in the Masterson pool was first considered in 1937 when a group attempted to create a unit block of minerals and leases. The owners of Masterson 1 succeeded in obtaining lease and cash donations in September, 1938, that was more than ample to finance a 6000-foot contract. Prior to the spudding of their test on March 18 all available lease and royalty interests in the general area had been withdrawn from the market. Numerous farm-out deals, involving only the shallow rights were made by the large companies in order to perpetuate short-term leases with shallow production.

Magnolia Petroleum Company's H. J. Eaton-Abell 1, NEc H&TC Section 23, Block 3, situated 6½ miles southwest of its deep failure on the McKee tract and 8½ miles northwest of the

West Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Fuhrman)—		
Fuhrman Pet. Corp., Ford 14	2132	4465
Crane County (McCamey)—		
Continental, Hughes 10-D	370	2400
Crane County (Sand Hills)—		
American-Liberty-Cranfill Bros., Tubb-Humble 8	842	4425
Crockett County (Crockett)—		
Gilcrease Oil Co., University-Humble 7-16	77	1481
Ector County (Foster)—		
Arrow Drl. Co.-York & Harper, Inc., Foster 9	1007	4285
Stanolind, E. F. Cowden 12-A	1219	4184
J. E. Witcher 11	2021	4182
J. E. Witcher 12	2019	4186
Ector County (Goldsmith)—		
Devonian Oil Co., Scharbauer 8-A	806	4206
Gulf, Goldsmith 179	2620	4213
Goldsmith 181	1252	4186
Goldsmith 182	852	4187
Goldsmith 183	220	4168
Goldsmith 185	700	4202
Landreth Prod. Corp., Scharbauer 5-P	442	4202
Phillips-Pure, C. Cowden 60	860	4143
Ector County (Jordan)—		
Atlantic, University 6-D	1786	3660
Kewanee Oil Co., University 3-A	1524	3654
Skelly-Atlantic, University 2-E	844	3645
Howard County—		
Magnolia, A. E. O'Daniel 16	234	2835
Moore Bros. Corp., Snyder 7-A-a	1119	2798
Parten Drl. Co., D. H. Snyder 2	202	2900
Irion County (Wildcat)—		
J. W. Ellis et al, Sol Mayer 1-a	*	2438
Jones County—		
Fain-McGaha Oil Corp.-Sinclair Prairie, Lyckman 4	1500	3239
Hedrick Oil Co., Ltd., D. Akard 2	*	3801
Humble, D. O. Huddleston 1	*	3125
Ungren-Frazier et al, Brock 2	334	1900
J. M. Griffin 3	1244	3260
Jones County (Wildcat)—		
R. R. Carroll et al, G. Herndon 1	*	3375
Pecos County (Masterson)—		
Childress Roy. Co., Masterson-I.T. I.O. 7	293	1500
Nolan-Atkins-Elder, Shearer-Gulf 1	*	1617
Pecos County (Payton)—		
British-American, Payton 17	333	2082
Sun-Atlantic, Payton 12	221	2093
Pecos County (Pecos Valley)—		
Mid-Continent, Jasper Realty Co. 5	109	1689
Pecos County (Taylor-Link)—		
Landreth, University 3-H	442	1628
Upton County (McCamey)—		
Geo. F. Getty, J. H. Shirk 4	138	2704
Sahara Oil Corp., Patillo, Baker-Republic 9	987	2277
Upton County (McClintic)—		
Shell (was Amtex), McClintic 6-A	60	3050
Ward County—		
Magnolia, Sealy 3-45	388	2836
T. P. Coal & Oil Co., H. James 29	100	2418
Western Well Service Corp., Johnson 2	155	2191
Winkler County (Henderson)—		
W. K. Royalty Co., Walton-Humble 7-A	628	3062
Winkler County (Kermit)—		
Magnolia, Walton 225	238	3240
Walton 226	211	3260
Walton 227	279	3185
Yoakum County (Bennett)—		
Shell, W. S. Hodges 1	1074	5236
Yoakum County (Wasson)—		
Humble, H. O. Wooten 10	1027	5115
H. O. Wooten 12	†	2578
J. W. Murchison-1L. Fikes, Elliott-Standard 5-B	1015	5120
Fairman 3	592	5130

* Failures; † Junked; ¶ Million cu. ft. gas.

Masterson deep prospect, is preparing to test oil saturated sandy-lime at 1890-94 feet, with an elevation of 2424 feet. Seven-inch pipe was cemented at 1830 feet. It originally was scheduled to go to the Ordovician, or 6000 feet. The company will soon proceed with the drilling of an Ordovician test on its large lease block. Leidecker & Cain's Lehn-The Texas Company 1, located in east corner of H&GN Section 71, Block 10, 4 miles west by north of the Masterson pool, encountered 10,000,000 feet of wet gas in broken pay at 1640-65 feet, with an elevation of 2444 feet.

Sinclair Prairie Oil Company et al's J. B. Tubb 3, SWc PSL Section 3, Block 27, only active deep test in the Sand Hills field, Crane County, registered a low structural position in logging top of Simpson at 5837 feet, with an elevation of 2544 feet. Formation tester used at 5828-68 feet showed 330 feet of fluid in 30 minutes, estimated 15 percent distillate, and the gas volume was rated at 3,642,000 feet daily. It will continue to the Ellenberger.

Major extensions for the Slaughter field, Hockley County, were recorded the past week. The Texas Company's Mallet 1-C, NEc Labor 11, League 51, Scurry County School Lands, 2½ miles southwest of production, began showing oil from saturated lime at 4957 feet, with an elevation of 3583 feet. The hole filled 4000 feet with oil in drilling to 5050 feet. Sid Richardson et al's Denton-Sun 1, located 4000 feet northwest of production, filled 3500 feet with oil and swabbed 4 barrels hourly from broken pay logged at 4839-4956 feet, with an elevation of 3541 feet. It was to be acidized late last week.

Shell Oil Company's Waples-Platter Company 1, which has been showing for a producer for several weeks and a probable 2-mile northeast extension for the Bennett field, Yoakum County, excluded water in plugging back from 5380 feet to 5311 feet. It will be acidized or shot.

Magnolia Petroleum Company's T. P. Land Trust 1, SWc T&P Section 9, Block 45, T-1-N, situated 1-2/3 miles northwest of the Goldsmith field, Ector County, logged nominal oil saturation at 4409 feet, with an elevation of 3310 feet, and was drilling at 4423 feet. No free oil has appeared, although first porosity was called at 4295 feet. Gulf Oil Corporation's Holt 1, SEc W½ PSL Section 1, Block A, half mile west of the north end of the North Cowden field, logged first oil show at 4167 feet, and was drilling at 4175 feet. This outpost encountered the Yates marker at 2820 feet, with an elevation of 3091 feet. Sid Richardson et al have started T. P. Land Trust 1, NEc T&P Section 13, Block 45, T-1-S, to try for a 1¾-mile southwest extension to the Goldsmith field.

Texas Panhandle Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Cities Service, Burnett 30-A	¶34.2	2880
Magnolia, Fee (lse. 244) 53	338	3135
Sinclair Prairie, Cooper 15	258	3149
Skelly, H. Schafer 91	603	3081
Gray County—		
Gayden Oil Co., Archer-Texas Co. 1	815	3291
Texas Co., M. B. Davis 16	1251	2750
Hutchinson County—		
Gulf and Panhandle, Dial-Perkins 91	257	3007
Smith Bros., Herring 5	205	3130
Whittington & Rubin, Merchant 1	¶9½	2848

* Failures; † Junked; ¶ Million cu. ft. gas.

North Texas Fields

Tests being made on important Clay and Archer wildcats.

Montague County Strawn area gets belated development.

Wichita Falls.—Production tests are due early this week on a wildcat in Clay County and offsets to wildcat producers in Clay and Archer counties. Favorable performance by these pending completions will cause a substantial gain in Strawn operations in North Texas.

An irregular pay section in the Browning pool, west central Clay County, was revealed by Shell Oil Company's Davis 1, south offset to the discovery, in drilling below the producing level without registering favorable saturation. Sand cored at 4461-64 feet carried slight show of oil. Core pulled at 4464-76 feet yielded 5 feet of hard sand and 7 feet of shale. The test is scheduled to resume coring. L. T. Burns et al's Browning 2, east offset to the producer, was awaiting production test through tubing after coring oil saturation in the Strawn at 4433-36 feet.

Bridwell Oil Company's Halsell 1, reported last week as showing for an oil producer after successful drill-stem test in saturated Strawn at 4754-93 feet, was slated to drill plugs late last week. It is located 1½ miles northeast of Halsell and 7½ miles north by west of the Browning pool. Halsell 1 is in a lower section of the Strawn series, and is considered to be on the west flank of a large structure that has been recognized by geologists for more than a decade. L. T. Burns and Consolidated Oil Company have contracted to drill Scaling 1, SEc HT&B Section 6, A-879, situated 2 miles northwest of the Browning area.

Deep Oil Development Company and C. B. Christie's Schlabs 1, SWc Lot 2, Block 3, Clark-Plumb Survey, Scotland area, Archer County, cemented pipe at 4131 feet for completion after coring saturation in Strawn at 4131-34 feet. It is a north offset to Adams Oil & Gas Company's Moer 1, discovery pumper completed last July after plugging back from water at 4165 feet to 4148 feet. This well and a portion of the drilling block was acquired last February by the above partnership.

Developments of canyon production in southwestern Archer County gained encouragement when Consolidated Oil Company's Portwood 19-C-D, NE Section 2412, TE&L Survey, logged an oil show in sand at 1790-1806 feet and in sandy-shale at 2130-43 feet. The test was shut down after drilling to 2400 feet. It originally was completed at 1467 feet as a pumper. British-American Oil Producing Company's T. B. Wilson 1, located 3 miles south of Mankins, logged an oil show in sandy-shale section at 4403-19 feet, with top of the Strawn lime at 3417 feet. It is due to fulfill a 5300-foot depth contract.

Oil production from a lower section of the Strawn was indicated for the Best pool, northeastern Cooke County, when Sinclair Prairie Oil Company's Best 8, east offset to a producer, cored saturation at 5141-73 feet. Formation tester yielded 600 feet of oil with no water. Top of the regular pay was called at 4943 feet, or about level structurally with the nearest producer, but did not carry normal saturation. The company's Putnam 1, one third mile northwest of its discovery and the second test for the area, missed production in the Strawn, and logged top of the Simpson member of the Ordovician at 5209 feet, or 65 feet lower structurally than the total depth of Best 8.

Development of the Nocona single-well Strawn pool, Montague County, is getting a tardy start. Rogers & Rog-

North Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County—		
Rathke Oil Co., Cowan 7, blk 15	10	1134
Shappell Oil Co., Bell 21, blk 5	24	1021
Archer County (Wildcats)—		
Bridwell Oil Co., A. J. Ikard 1, sec 1890	*	1101
White & Duncan, Prideaux 1, sec 1836	*	1024
Baylor County (Wildcat)—		
Baldwin et al, W. B. Mills 1, sec 2413	*	1409
Clay County—		
Houston Bowers et al, Shumake 11, blk 4	306	1140
R. C. Hart et al, M. A. Stephenson 3, blk 3	11	240
Kimmell & Lee Co., Firestone 11	137	1141
Firestone 12, sec 23	35	1136
Cooke County—		
Kingery Bros., et al, Joe Fisher 2	32	950
Whitfield - Pearson & Grimes, B. Voth 3	124	1794
Grayson County (Wildcat)—		
McDougal et al, Jackson 1	*	582
Jack County—		
Callihan & Jackson, Hoefle 2	*	650
Gilmore et al, Hanna 1-B, sec 3318	*	520
Gunnels & Norris, W. D. Moore 1, sec 2	*	640
O. J. Perrin et al, J. S. Rhodes 3	352	3130
Montague County (Wildcats)—		
Joe Benton & Holmes, Joe Bowers 1	76	2958
Seitz-Comegys & Seitz, Guerin-Texas Co. 1	*	3730
Montague County—		
Yeargin et al, Bouldin 2	10	820
Throckmorton County—		
Industrial Oil Co., Morrison 1, sec 1614	12	842
Robinson et al, O'Dell 4, sec 909	*	320
Wichita County (K-M-A)—		
Deep Oil Dev. Co., Bradley 3	304	3792
Hamilton & Joe Worsham, Waggoner Bros. 3, sec 13	872	3820
Hanlon & Buchanan, Fassett-Tuttle 9-B, sec 2	744	3919
Panhandle Ref. Co., Stone 7-A	552	3820
Shell and Phillips, Preston 4-A, sec 20	996	4008
Sinclair Prairie, Martin 4, sec 12	75	3817
Worth Oil Co., W. J. Logan 6-B, blk 21	840	3863
Wichita County—		
Petroleum Prod. Co., S. George 1	*	1714
M. Staniforth et al, S. George 3	2	704
Sutterfield et al, Boyd 2-S, lot 12	*	754
Wise County (Wildcat)—		
Jackson et al, Neely 1, blk 29	*	498
Young County—		
Head-Roberts & Swink, Logan 1, blk 24	*	618
Powers et al, Larrimore 5, sec 253	*	592
West & Stanford, J. Williams 1	10	575

* Failures; † Junked; ¶ Million cu. ft. gas.

ers, owners of the producer, are drilling below 1000 feet on Astley 1, a north offset farmed out by The Texas Company. Stanolind Oil & Gas Company has authorized a west offset to the flowing well. R. L. Foree and L. S. Youngblood, who financed the producer to the upper Strawn, have assigned control of 600 acres of scattered leases to Anderson-Prichard Oil Corporation for $55,000 cash. The former will receive 50 percent working interest in the property after the Oklahoma City buyer amortizes the cost of development.

Drivers of company cars must have chauffeur license

Attorney General Gerald C. Mann has ruled that all persons driving company owned cars, or the cars owned by their employers must have chauffeurs' licenses. He pointed to decisions of the courts to sustain his ruling.

Thus, all oil men who drive cars owned by the companies for whom they work must have chauffeurs' licenses to avoid fines. The State Highway Patrol is expected to enforce the ruling.

Revival recorded in East Texas field activities

Kilgore, Texas.—Operations in the East Texas field have been revived after declining to a record low level during March. Currently there are 22 operations, including 15 drilling tests. The completion of 8 wells the past week was preceded by only one completion during each of the previous two weeks.

Field work has been held in abeyance pending the Federal Court decision on the Rowan-Nichols Oil Company's attack on the Texas Railroad Commission's method of apportioning production between leases and wells. Oral testimony was concluded February 10 and the court allowed 22 days for the filing of briefs.

Sinclair Refining Company, Pipe Line Division, continues to add to its well connections in the East Texas field, having connected to 315 wells formerly served by The Texas Pipe Line Company since March 1. The former has taken a greater number from other lines, a source of crude supply for a long period.

East Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Goldsmith & Powell, E. E. Moore-Sinclair 1	28	3750
Humble, C. A. Brightwell 8 (44.9-ac)	4200	3713
Kilgore Area—		
Gulf, Christian 39-C (277.85-ac)	4000	3666
Gold Star Oil Co., J. A. Butts 3 (36/100-ac)	2000	3576
Magnolia, W. M. Jernigan 13 (79.66-ac)	8000	3715
Longview Area—		
Cushing Drl. Co., Owens 33-A (208-ac)	1500	3593
B. F. Phillips et al, Sam Kay 1	*	3674
Roane Pet. Co., G. Anderson 3	2500	3520
Titus County (Talco)—		
Humble, G. A. McPeters 5 (78.26-ac)	345	4333

*Failures; †Junked; ¶Mil. cu. ft. gas.

Southwest Texas Fields

Two new fields and a new sand in Jim Wells County. Wildcat showings indicate two new fields in Laredo area.

Corpus Christi.—After a slack first quarter of 1939 in which discoveries dropped to the lowest level in many years, April brought the South Texas Gulf Coast wildcatting back to a near boom level. New fields were opened along the entire trend and at the same time several important field extensions resulted from the establishment of additional producing sands.

In Jim Wells County, interest increased to a level far surpassing the Alice play of early in 1938 when new Frio and Yegua sand fields were discovered. Nueces County, likewise, had another field added and Jackson County saw the discovery of the first crude oil production in South Texas near 8000 feet.

F. A. Gillespie & Son's M. T. Shear 1, in AB&M Survey, Abstract 16, southeastern Jim Wells County and 7½ miles southeast of Alice, flowed 145 barrels of 41.6-gravity pipe line oil in 24 hours through ⅛-inch choke with 1450 pounds tubing and 2000 pounds casing pressure. The well was completed through perforations at 5438-45 feet. It had been drilled to 6592 feet, sidetracked and went to 5486 feet where casing was set. The sand section was logged between 5438-50 feet in the Frio.

The second discovery of a new field is Texas Gulf Producing Company's Antonio Perez Garcia 1, in the Manuel Barrerra Survey, Abstract 36, which was flowing into the pits making oil and wash water at the rate of about 5 barrels per hour through ⅛-inch choke. Pressures have built up to 450 pounds on tubing and 500 pounds on casing. This discovery, likewise, is in Jim Wells County, 10 miles northwest of Alice. It is doubly important due to the fact that it is in the Yegua sand, the zone having been cored from 6492-6518 feet. Due to contract, the well was carried to 6862 feet and production is coming from perforations at 6485-6530 feet where 180 holes were made.

Both of the discoveries are on farmouts from the Shell Oil Company. Magnolia Petroleum Company holds much acreage in the vicinity. Other major and independent leaseholders indicate that these discoveries will bring about an immediate development program.

Clark Field Extended

Jim Wells County's third discovery of the week was in the form of a one-mile south extension to the Clark field. This well, Gravis and Doran and Buescher's Lillian Muil 1, Lot 19, Fraelich subdivision, is flowing an estimated 150 barrels of oil per day and some wash water through ⅛-inch choke. It is producing from the Vicksburg sand which was cored at 5326-30 feet, bottom of the hole still being in sand. This new producer is the discovery of a new sand as well as the extension to the field. The first producer in the area, drilled by the Gravis and Doran organization, is a gas and distillate well in the Frio sand at 4800 feet. It was not carried sufficiently deep to reach the Vicksburg showings found in the new well.

The new discovery west of Alfred in Jim Wells County, opened several days ago by Ike Howeth and Lewis Production Company, is receiving a drilling program. Two wells have been commenced in the immediate vicinity of the discovery, while another test has been started several miles to the northeast.

In Nueces County, considerable interest centers around a new oil field which has been opened nearly two miles north of Luby field production. This new field is the product of Seaboard Oil Corporation, which also opened the Luby field. On a geophysical prospect, this company drilled John LaPrelle 1-A, in Block 9 of the Robert and White subdivision. The test cored a sand at 4743 feet, which continued to below 4761 feet. On a drill-stem test with seat at 4347 feet, the test recovered 720 feet of pipe line oil, 60 feet of slightly brackish water and considerable pressure in 15 minutes. The gauge failed to work so the exact pressure is not known. The test had been carried ahead to below the producing sand of the Luby field which apparently had shaled up and was going ahead to contract depth of 7000 feet.

Richard King field, flank production to the huge Bentonville-King gas structure, also in Nueces County, was in process of completion after establishing crude oil production in the Frio sand at 5391-5414½ feet. The well, King 1-A, NW Section 30, and one mile south of present oil production, is drilling plugs after setting casing on bottom at 5416 feet. On a drill-stem test at 5387-5403 feet, it developed 200 pounds pressure and flowed oil for 25 minutes. The test then recovered 1350 feet of 39.4-gravity crude. A second drill-stem test from 5401-16 feet recovered 3850 feet of clean oil, 250 feet of drilling mud, 50 feet of water and showed 85 pounds working pressure in 20 minutes.

The above field has production in the upper Frio at 4000 feet and in the Vicksburg below 6100 feet.

Continuing along this trend, McCampbell field continues to be an important development area. The Aransas Pass townsite, tied up in development due to title troubles, is receiving its second well. This area is contracted for a drilling campaign of at least 50 wells to the 7100-foot zone, all expected to be finished by winter.

Jackson County's Francitas field, along with the other hot areas, was in line for an increased play. Wynn Crosby's Kopnicky et al 1, 4000 feet southeast of production and in a new oil sand at 7918-67 feet, flowed 115 bar-

rels of oil on potential test through ⅛-inch choke with 2050 pounds tubing and 3000 pounds casing pressure. The well started making salt water which increased to 50 percent whereupon perforations at 7963-65 feet were squeezed and new perforations were to be made higher. It is the deepest crude oil production to be opened in South Texas.

In the same area, Housh & Thompson were near the 7900-foot sand in Broughton 1, while Mills Bennett's Lowrance 1 was at 8944 feet and waiting on orders.

Duval and Zapata County tests showing production

Laredo.—Mirando district had two wildcats in the process of testing, both indicating new oil fields for the Jackson formations. They will mark the revival of development along these trends.

Frank J. Gravis and Rutland Oil Company's Atlee Parr 1, Block 2, San Andres Grant, about two miles southeast of the Longhorn field in Duval County, topped an oil sand in the Cockfield (apparently Hiawatha zone) at 5952 feet and drilled to 6143 feet. Casing was set on bottom and perforated at 5955-60 feet. It showed considerable salt water with some oil under 300 pounds pressure, and was squeezed. New perforations were made higher in the zone and tests were being continued. The well is considered to be the edge producer of a new field for the Benavides group.

In the shallow district, Gordon W. Johnson of Mission was testing Mabel Adami 1, NW Section 346, near the northeast corner of Webb County. It cored Mirando oil sand at 922-99 feet. A number of tests have been drilled in this general sector without success although they have had interesting oil showings in the Mirando zone.

Establishment of a new pool south of the Mirando Valley field in Zapata County is apparent with Interstate Minerals Inc.'s Lopez 5 making a gasser spraying oil from the 1700-foot Mirando sand. It first was thought that this well was an extension to the above field, but further correlation indicates that it is producing from a depth 15 feet below the water level of that zone. This would suggest another lens along the known shore line.

Additional contracts let for wildcats in Rio Grande Valley

Mission.—Rio Grande Valley's deep wildcatting program gained additional work with the awarding of contracts for drilling of tests on several key geophysical prospects.

Shary-Maddox Company awarded contract to Rowan & Hope of San Antonio for A. C. Neal 1 in the Santa Anita Grant of southern Hidalgo County. At the same time, Rowan and Hope were nearing contract depth on Lonhoria 1, in the northern portion of the county. The well, located several miles east of the La Reforma production, is running considerably lower than that production at 6200 feet.

Andrade III et al's Yturria Land & Live Stock Company 1, in the LaSal Vieja district, was trying to sidetrack at 7707 feet.

Humble Oil & Refining Company junked its first corehole on the Kenedy ranch in Kenedy County at 7920 feet, and has commenced a second, expected to be carried considerably deeper.

Midwest Royalty Company's deep test west of the LaSal Vieja field is to be started immediately, the contract being 9000 feet, while Dougherty et al's 10,000-foot hole east of Point Isabel is scheduled to commence within the next several days.

The Sun field of Starr County was defined with the abandonment of Sun Oil Company's Augustin Olivarez 4, which was carried to 5218 feet without finding any encouragement.

Northeast of the Barbacoas field, Starr County, Magnolia Petroleum Company was cutting out stuck drill pipe near bottom in Garcia 1, which had been drilled to 6084 feet before trying to blow out.

Attempts were being made to widen the deeper production on the northeast side of the Samfordyce field of Hidalgo County. Fohs Oil Company's Annie Sheldon 1, 3000 feet east of the north extension well, perforated at 3960-70 with 24 shots, tested salt water and plugged back for further tests through perforations at 3422-27 feet. About 3000 feet northeast of the Fohs discovery test, John Messenger's V. Garcia 1, Tract 238, cored gas sand 3936-78 feet and oil sand 3978-83 feet. The hole is bottomed at 3986 feet where casing has been set.

Texas adopts new tax report penalties

The Governor has signed four bills passed by the Legislature recently which enable the state comptroller to force operators to file tax reports promptly. The bills provide that the comptroller may notify the pipe line company to disconnect wells if the producer fails to file a report on time. In a letter addressed to operators, the comptroller pointed to these provisions in the bill:

"F. On notice from the state comptroller, it shall be unlawful for any person to remove any natural and/or casinghead gas from any lease in this state whenever the owner or operator of said lease has failed to file reports as required under the provisions of this Act.

"G. Whenever any lease producing natural and/or casinghead gas changes hands, it shall be the duty of the owner or operator of said lease to note on his last report that said lease has been sold or transferred, showing the effective date of said change and the name and address of the individual, firm, association, joint stock company, syndicate, co-partnership, corporation, agency, or receiver who will operate said lease and be responsible for the filing of reports provided for in this Act. It further shall be the duty of the new order or operator of said lease to note on his first report that said lease has been acquired, showing the effective date of said change and the name and address of the individual, firm, association, joint stock company, syndicate, co-partnership, corporation, agency, or receiver formerly owning and/or operating said lease."

South Texas Completions

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Brooks County—		
Humble, McGill 7 (Kelsey)	400	4730
Jackson County—		
Crosby, Kopnicky 1 (WC), Francitas area	850	7967
Lewis, Drushel 7 (Cordelle)	500	2721
Porter, Drushel 6 (Cordelle)	450	2698
Yaussi 1 (Cordelle)	†	2577
Jim Wells County—		
Graham & Mosser, Bankers Mortgage H-3 (East Alice)	350	5370
Henshaw, Inglott 2 (East Alice)	375	5330
Howeth & Lewis Prod., Adams 1 (WC), 10 mi ne Alice	600	4674
Osborn & Henshaw, Thigpen 2 (East Alice)	200	5400
Yoakam & Gorman, Hevelka 1 (WC), 24.87-ac tr, blk 129	*	5389
Kenedy County—		
Humble, Kenedy 1 (WC), 13.8 mi se Rivery Beach	*	7920
Live Oak County—		
Cities Service, McCaslin 1 (WC), Ramirena area	*	6111
Nueces County—		
Bryant, Galvan 2 (Clara Driscoll)	400	5700
Killam, Webb 1 (Clara Driscoll)	350	5716
Seaboard, Wilson 3 (Riverside)	150	5011
Stanolind, Kamfhenkel 4 (Clara Driscoll)	225	5392
Refugio County—		
Coronado, Rooke 20 (La Rosa)	700	5917
Houston, Pratt-Hewitt-Rooke 63 (Refugio)	500	6260
Quintana, Williams 9 (Tomoconnor)	1500	5465
San Patricio County—		
Benedum, Bell 1 (McCampbell)	1500	7161
Phillips 1 (East White Point)	*	6007
Bryant, Mitchell & Duncann 1 (McCampbell)	1500	7150
Brauer, Fee 4 (McCampbell)	1000	7152
Grote & Corgey, McCampbell 6 (McCampbell)	1000	7150
Peterson-O Brien-Scrivner 1 (McCampbell)	1000	7150
Houston, Baldwin 3-A (East White Point)	500	5663
Humble, Countiss 1 (East White Point)	500	5670
Landrum-Jones, Wood 1 (McCampbell)	1100	7150
Nueces, Nelson 1 (McCampbell)	600	7124
O'Banion & Cadell, Williams & Cavitt 1 (McCampbell)	1000	7134
Plymouth, Solar & Ficke 2 (East White Point)	600	5694
Welder 110-C (Plymouth)	500	5646
Rantex, Lemon & Thompson 2 (McCampbell)	1000	7182
Shell, Kirk 2 (East White Point)	550	5655
Sinclair Prairie, Womack 2 (East White Point)	500	5675
Victoria County—		
Barnsdall, McFaddin 25 (McFaddin)	400	4413
Gulf, Traylor B-13 (Heyser)	350	5485

SAN ANTONIO DISTRICT

Bexar County —		
Krumm, Kempf 1 (WC), Von Ormy area	4	770
Caldwell County—		
Bridges, Smith 1 (Salt Flats)	750	2661
Guadalupe County—		
Diamond-Half, Roamel 1 (Darst Creek)	300	2543
Nancy Lee, Wilson 2 (Darst Creek)	250	2654
Texas Company, Dowdy 4 (Darst Creek)	250	2537

LAREDO DISTRICT

Calhoun County—		
Continental, Welder 1 (WC), 5 mi se Seadrift	*	6012
Duval County—		
Bridwell, Welder 1 (WC), survey 552	*	2871
Continental, Driscoll A-35 (Driscoll)	350	3383
Cox & Hamon and Gorman-Yoakam, Cuellar 3 (Plymouth) (Hoffman)	*	2811
Cuellar, Cuellar 5 (Hoffman)	200	2563
Gifford-Houston-Hart, Gruy 1 (WC), Rancho Solo area	*	2605
Magnolia, 6 (189) DCRC (Cedro Hill)	150	1477
22 (201) DCRC (Eagle Hill)	125	2119
Rowan & Hope, Cuellar 3 (Tesoro)	300	5099
Saltmount, Puig A-7-B (North Sweden)	325	4821
Transwestern, 20 (297) DCRC (WC), SRC area	*	1090
Jim Hogg County—		
Humble, Kelsey Bass 11 (Kelsey)	400	4739
McMullen County—		
Ezzell, Fee 37 (Ezzell)	175	1480
Jones, Ezzell 84 (Ezzell)	*	1595
Ezzell 85 (Ezzell)	*	1518
Schimmel, Kountz 2-A (San Jose)	*	1201
Webb County—		
Navarro, Benavides 1 (WC), ½ mi e of West Cole field	*	3508
Zapata County—		
Bob & Richey, Martinez 7-A (Charco Redondo)	7	180
Buffalo, Hinnant C-6 (Mirando Valley)	150	1992

*Failures; †Junked; ¶Mil. cu. ft. gas.

Texas Gulf Coast

Aldine wildcat yields 1660 feet of 38-gravity oil. Drill-stem test reveals shallower sand at Caplen.

Houston.—The next oil field for this district may be at Aldine, Harris County, where Texas Gulf Producing Company et al's Weary 1 was drilling ahead below 7346 feet in shale after a drill-stem test at 6794 to 6815 feet yielded 1740 feet of fluid, 1660 feet of 38-gravity pipe line oil, and some oily mud through ¼-inch choke in 10 minutes. No water was shown. Working pressure was 100 pounds; bottom-hole pressure, 2900 pounds. Weary 1 will probably be carried to 7500 feet, contract depth, and casing run for a production test.

A new oil sand was discovered at Sun Oil Company's Caplen field in Galveston County last week when a drill-stem test was made at 7143-48 feet on Hudnell et al 1, S. F. Hughes Survey. At the close of the week the well was down to 7248 feet in salt water sand, topped at 7236 feet. The test, made in 7 minutes through ¼-inch chokes, recorded a 260-pound pressure, 115 feet of pipe line oil, and one stand of mud. Another oil sand was cored at 7170 to 7190 feet. The discovery well at Caplen was completed at 7478 feet.

On Bellaire prospect, Harris County, Midwest Royalty Company's Westmoreland Development Company 1, J. Wells Survey, was drilling in shale at 9413 feet at the end of the week and was still in Cockfield formation, topped around 8500 feet. A show of gas was had at 9050 to 9085 feet.

Sun Abandons Wildcat

North of Call field, Newton County, Sun Oil Company has abandoned Pevey Moore Lumber Company 1 at 7858 feet in water sand topped at 7836 feet. Side wall cores showed oil sands around 7500 feet. The hole was plugged back and sidetracked at 7120 feet. The sidetracked hole was drilled to 7459 feet in water sand topped at 7452 feet. A drill-stem test at 7412 to 7459 feet recovered 20 stands of salt water in 15 minutes through quarter-inch chokes.

On the Algoa prospect, Brazoria County, Wynn Crosby's Wilson 1, A. G. Reynolds Survey, was shut down for orders after recovering salt water on drill stem. The wildcat was perforated with 24 shots from 8842 to 8852 feet. Another test at 9495 feet showed water and a trace of oil.

One more wildcat failure was reported in the Iowa Colony area, Brazoria County. Housh & Thompson's Allen 1, K. Ehrman Survey, topped Frio at 5870 feet and cored salt water sand at 6526-36 feet, 6662-64 feet, 6667-74 feet, 6764-70 feet.

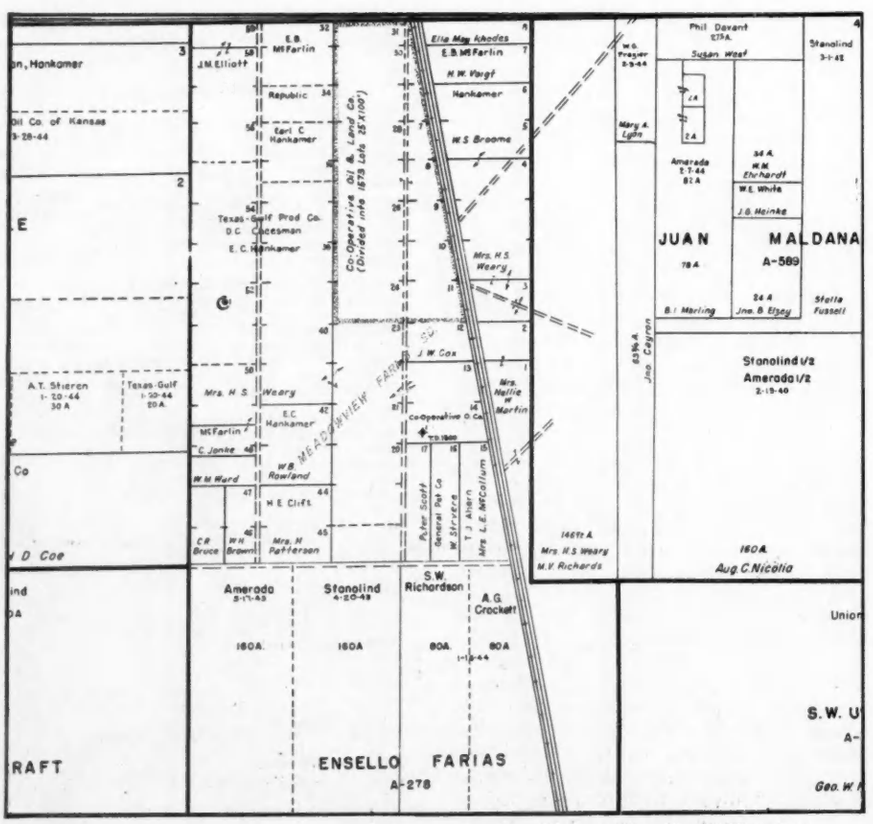
Northwest of production at Sandy Point, Brazoria County, Hamman Exploration Company's Darrington State Prison Farms 1, A. McFarland Survey, was fishing at 8917 feet. A production test on this wildcat at 8887 feet recovered a little gas.

Second Wilcox Well

The second Wilcox producer for Ace field, Polk County, Shell Petroleum Corporation's Doucette 1, P. A. Sublett Survey, flowed 324 barrels of 36.4-gravity oil in 24 hours on a potential test through a quarter-inch choke. Tubing pressure was 1700 pounds and casing pressure, 2100 pounds. The well was completed in sand at 7785 to 7790 feet, about 40 feet lower than that in Peyton Brothers first Wilcox producer.

East of Richmond, Ft. Bend County, Royal Oil & Gas Company and Pat Rutherford have made location for a wildcat, Bertrand 1, 1100 feet north and 2800 feet west of the southeast corner of J. Wilkens Survey.

On the northwest flank of Sugarland field, Ft. Bend County, Atlatl & Adams Oil & Gas Company have made location for C. H. Stancliff 1, 1000 feet southwest of Strake Petroleum Corporation's Sugarland Industries 2. It is also 330 feet north and east of a 70-acre tract in the E. Alcorn Survey. The northwest flank of Sugarland has been tested by Strake Petroleum Corpora-



—Zingery Map Co. bf Houston

Aldine area, Harris County, where a wildcat indicates a new field may develop.

Texas Gulf Coast Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Ace—		
Shell, Doucette 1, dr to 8553 ft, pb and comp.	324	7791
Boling—		
Mackhank Oil Co., Farmer C-12..	452	4685
Call—		
Sun, Pevey Moore 1	*	7858
Cheek—		
Humble, Broussard Trust 2.....	92	7721
Clam Lake—		
Shell, McFaddin State 2	118	3841
Dickinson—		
Bennett Oil Corp., Harris 1.....	414	8795
Fairbanks—		
Johnson et al, Jeter -	*	6843
Stanolind, Look 2	*	7525
Friendswood—		
Humble, Jones 1	234	6089
West Prod. Co. 10	603	6044
Hankamer—		
Gulf, Boyt 28	105	2960
Hardin—		
Humble, Partlow 11-A	¶½	7735
Hastings—		
Stanolind, Ford B-21	572	5507
McDonald 4	624	6080
Joe's Lake—		
Republic Prod. Co., Hurd Fee 19..	457	7707
League City—		
Geo. Echols, Stewart Ross 3.....†	1083	9138
Louise—		
Gulf Stream Oil Co., Kountz A-11..	215	5160
Markham—		
Powers Prod. Co., Sisk 1.....	*	4149
Orange—		
Orange Pet. Corp., Chesson 1-A...	110	5600
Red Bank Oil Co., Michel 4.....	87	5569
Pierce Junction—		
Rio Bravo Oil Co., Settegast A-33.	234	4361
Seabreeze—		
Sun, Hebert Broussard A-4	39	8479
S. W. Pipkin 1	*	8413
Tomball—		
Humble, Kuehn 2	11	5554
Turtle Bay—		
Stanolind, Lotz 1	366	6647
Van Vleck—		
Skelly Oil Co., Cobb B-16	389	7994
Withers—		
Smith & McDannald, Lehemberg-Coffey 1	77	5545
Worthington-Broussard 1	116	5547
Texas Co., Broussard 6	103	5546
Broussard 7	123	5545
Brazoria County—		
Housh & Thompson's Allen 1, Iowa Colony area, K. Ehrman sur....	*	7012

* Failures; † Junked; ¶ Million cu. ft. gas.

tion and several wells in this area have indicated that deep sands lie up against the salt dome. The area has been worked with geophysics. Fohs Oil Company and Tide Water Associated Oil Company hold acreage around the flank of the dome.

Turtle Bay Extended

Over a mile east of production at Turtle Bay field, Chambers County, Stanolind Oil & Gas Company has completed Tassie Lotz 1, G. B. Jamison Survey, for 366 barrels of pipe line oil daily through a quarter-inch choke. Tubing pressure was 1600 pounds; casing pressure, 1950 pounds. Casing was perforated in Marginulina sands with 15 shots from 6642 to 6647 feet.

At Cedar Point field, Chambers County, Standard Oil Company of Texas and Salt Dome Oil Corporation's State 56-94 recovered salt water from Miocene sand last week. Casing was perforated with 50 shots from 3957 to 3970 feet, and a 20-minute drill-stem test through ¼-inch chokes showed 2500 feet of salt water.

On the southeast side of Fairbanks, Harris County, Ralph Johnson's Jeter 1 was abandoned at 6843 feet. The producing horizon held salt water sands. On the northeast side of the field Sinclair Prairie Oil Company's Goodykoontz 3 cored oil sands at 6778 to 6836 feet and set casing for a production test.

South Louisiana

Pike's Peak Wilcox project running 300 feet high. Casing set on mile-extension for Golden Meadows.

Lake Charles. — Interest along the Wilcox-Sparta trend in South Louisiana centered last week on Falcon-Seaboard Oil Company's Hobgood 1 on Pike's Peak prospect in Pointe Coupee Parish. The well is running 300 feet high on the Sparta, which was topped around 6080 feet. This formation was expected below 6400-6500 feet. The wildcat has logged several gas shows from the Vicksburg through the Cockfield formation. A good gas sand was logged at 5150 to 5158 feet. At the end of the week coring was in progress in shale at 6150 feet presumably near the Wilcox. So far the well has looked encouraging.

Some operators are expecting the Pike's Peak wildcat to be the next discovery well of a new Wilcox field in South Louisiana, also the first for the parish. Although no wells are close enough for correlation, it is believed that Hobgood 1 is located on a large structure. Seismic work indicated a large closure. Several leases have been sold in the area at $50 per acre. Leaseholders on the prospect are Roper and Todd Barnsdall Oil Company, Arkansas Fuel Company, Danciger Oil & Refining Company and Deep Rock Oil Company.

Mar-Tex Oil Company has set 7-inch casing at 8522 feet in Falgout Holding Company 1, a mile northeast of production at Golden Meadows field, Lafourche Parish, preparatory to a production test. The well cored a new sand some time ago at 7171 to 7202 feet and a drill-stem test showed pipe line oil. Other oil sands were cored at 7920-60 feet and at 8160-90 feet. The regular producing horizon for the field is found around 8500 feet.

Disappointment at Villa Platte

Chances of Wilcox production at Villa Platte field, Evangeline Parish, looked disappointing last week when Continental Oil Company plugged W. L. Tate 1 back from 10,890 feet to 8920 feet to attempt to make a well in the Haas sand. The lower formations were broken and tight.

In Calcasieu Parish, Humble Oil & Refining Company has made a wildcat location on a geophysical prospect near Edgewood. Edgewood Land & Logging Company 1 is 466 feet north and 466 feet east of the southwest corner of Section 32-7s-10w.

At Pine Alley, a geophysical prospect in St. Martin Parish, Roper & Todd's Levert 1 was coring ahead below 6060 feet last week after an electrical log, run for correlation purposes, resulted in a report that the well is about 100 feet higher than other wells in the area. Continental Oil Company purchased several tracts in the area

South Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bancroft—		
Republic Prod., Whitman 2	300	7322
Columbia Land 6	320	7311
Baton Rouge—		
William Helis, Nelson 4	¶2½	7180
Charenton—		
Pan American, Laws 12	146	7210
St. Mary Oil Co., Blanchard 5	*	1158
Chacahoula—		
Sun, Dibert et al, 1	672	7236
Jennings—		
W. T. Burton, Robira 6	300	6430
Lirette—		
Humble, Ellender 2, dr to 11,610 ft, pb and comp.	3	8391
New Iberia—		
Texas Co., Decuir 1	108	5823
North Tepetate—		
Atlantic, Doga 1	240	8981
Port Barre—		
Pan American, Garland 4	400	5178
Garland 4-A	½	1515
Quarantine Bay—		
Gulf, Quarantine Bay QQ 8	456	8175
Roanoke—		
Humble, Ferguson 1	*	8008
Sulphur—		
Union Sulphur, Fee 822 (wo), otd 3228 ft	94	3428
Valentine—		
Pan American, Acosta Heirs 2	256	5410
Venice—		
Tide Water, Manhatten Fruit 8	31	7110
Buras 4	248	7225
Villa Platte—		
Continental, Fontenot 1	*	3125
Woodlawn—		
Union Sulphur, Calcasieu National Bank 4	240	8900

* Failures; † Junked; ¶ Million cu. ft. gas.

TELEPHONES

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New Orleans—Uptown 1856

Houston, Texas
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ELMAX CONSTRUCTION CO., INC.

Harvey, Louisiana

(Across the river from New Orleans)

last week for $40 per acre. Other lease holders in the district are Magnolia Petroleum Company, Earle P. Halliburton, Incorporated, Sun Oil Company, Canal Oil Company and Danciger Oil Refining Company.

Vendome Petroleum Company was preparing to rework for the third time Kenilworth 1, a wildcat east of St. Bernard, St. Bernard Parish, which indicated it would open the first oil field for the parish some time ago. Last week it was flowing 111 barrels of net oil and 30 to 40 percent brackish water through a 11/64-inch choke from perforations at 10,596 to 10,605 feet. These perforations are being squeezed with cement.

The Texas Company again will attempt to establish commercial production at Henderson salt dome, St. Martin Parish. Location was staked for St. Martin Land Company 12, 3861 feet south and 2945 feet east of the northwest corner of Section 21-8s-7e.

The Texas Company has made location for another deep test at Horseshoe Bayou field, St. Mary Parish. St. Mary Land Company 2 is 2192 feet west and 893 feet north of the northeast corner of Section 23-17s-9e. This is one of the deepest fields in the world.

Shell Petroleum Corporation's Schexneyder 1, discovery well at Li-Pice, St. James Parish, was flowing 60 barrels of 45-gravity oil and 3,654,000 cubic feet of gas daily through a 11/64-inch choke with a tubing pressure of 4500 pounds and a casing pressure of 4600 pounds. The well was completed at 10,933-940 feet.

The Texas Company may make a test of a new sand at Jefferson Island field, Iberia Parish. Jefferson Island Salt Mines 2 was drilled to 9458 feet in salt, topped at 9444 feet. A short string of 5¾-inch casing was set onto a 7⅝-inch string, which was landed at 8451 feet. The well has cored oil sands at 7772-81 feet, 7821-22 feet, 8507-09 feet and heaving shale from 8533-49 feet.

On the flank of Fausse Point, Iberia Parish, The Texas Company is preparing to make a test on State 5. Casing is being perforated at 9474-9565 feet and from 9772-82 feet. The hole is bottomed at 12,125 feet in water sand.

W. T. Burton has made location for another wildcat on the Lake Pontchartrain prospect in Orleans Parish. State 2 is 10,043 feet north and 2743 feet west from the lighthouse on Pt. Aux Herbes.

On the south flank of Roanoke field, Jefferson Davis Parish, Humble Oil & Refining Company abandoned Ferguson 1 at 8008 feet in shale and then made location for DeVilbiss 6, a quarter mile northwest of the dry hole. It is also 1358 feet south of the north line and 1994 feet west of the east line of Section 14-9s-4w.

Humble Oil & Refining Company has completed its second well at Potash field, Plaquemines Parish. Orleans Levee Board 38 flowed seven barrels per hour through a ¼-inch choke at 7980 feet. Location has been staked for Orleans Levee Board 39, 1062 feet northeast along the the northwest line of Section 13 from west corner and 690 feet southeast at right angles in Section 13-18s-15e. It is 500 feet northeast of Orleans Levee Board 38.

North Louisiana Fields

Only routine operations; Shreveport still leading area. Cotton Valley "E" sand well opposite side from discovery.

Shreveport.—Only routine developments occurred last week in North Louisiana, the Shreveport field adding 2 new oil wells to bring its total to 29 and accounting for a failure in the basal Glen Rose lime horizon. Two new locations were made and the field had 11 drilling operations.

The abandonment was in the northeast offshoot of the field, being W. R. Nicholson Oil Company's DeSoto 1, C NW NW 26-18n-14w, which logged porous lime from 5556 to 5563 feet. Five and one half-inch casing was cemented with 500 sacks at 5555 feet and when tested the well showed salt water along with considerable oil. It was then plugged back to 5545 feet and re-tested but the water was not shut off. The proximity of the water level to the oil saturation in this part of the field is blamed for the failure; extreme caution is necessary to prevent going into the water level.

Deepest of the 11 drilling operations in the Shreveport field was Hurricane Petroleum Corporation's S. J. Harman 2, C SE SW 34-18n-14w, which was coring below 5555 feet.

Magnolia Petroleum Company's Hodges-Coyle 1, C SW NW 21-21n-10w, on the northwest flank of the Cotton Valley field, was completed for an oil producer in the Bodcaw "E" sand of the lower Marine, flowing 541 barrels in 15 hours through 10/64-inch choke, with tubing pressure 925 pounds and casing pressure 1450 pounds. Gravity was 45.6 and gas/oil ratio was 2430 to 1. This well is diagonally across the Cotton Valley field and about four miles from the discovery Lower Marine oil well on the southeast flank of the field, Stanolind Oil & Gas Company's Pardee 1, Section 36-21n-10w.

Two deep wildcat tests were at interesting depths. In Bienville Parish, Arkansas Fuel Oil Company's Gayoso 2, C SW SE 14-16n-10w, drilled shale and lime at 8054 feet in Lower Marine, which was topped at 7850 feet; elevation is 188 feet. This test topped basal Glen Rose (Pettet) lime at 5043 feet and topped Travis Peak at 5432 feet.

In Webster Parish, Union Producing Company's Walker Unit 1, C SE 30-18n-8w, drilled shale and sand at 9506 feet. This test is said not yet to have picked up any Lower Marine. Top of Travis Peak was 6910 feet; elevation is 256 feet. Standard Oil Company of Louisiana and Joe Modisett set 9⅝-inch casing at 7008 feet in Frost Lumber Company 1, SE SE 14-23n-2w, Union Parish wildcat.

The lenticular Tokio and Paluxy horizons in the Vivian offshoot of the old Pine Island field accounted for the three failures last week and no commercial wells.

A large block of wildcat acreage has been assembled in township 5 north, range 3 west, north Rapides and south Grant Parish for a Wilcox test by Longwood Oil & Gas Company (Belchic & Laskey) of Shreveport.

South of the Angelina-Caldwell Flexure but on the north side of the Eola "trend," Adams Oil & Gas Company last week started moving in materials for a 2700-foot Wilcox sand test in SE NE SW 1-6n-2e, La Salle Parish, adjacent to the Grant Parish line. Location is on a 5000-acre block that was mapped by seismograph and checked from subsurface data. Location is south of White Sulphur and near the village of Rogers. In this same general part of the "trend" there is considerable geophysical activity. Atlantic Refining Company has a torsion balance unit in townships 9 and 10 north, range 1 east, La Salle Parish. Standard Oil Company of Louisiana has a gravimeter unit making a general check of Catahoula Parish. In this parish several companies are reported bidding for geophysical option on Tensas Delta Lumber Company's 150,000-acre holdings that also reach over into La Salle Parish.

Shell Oil Company continues to add to its holdings in township 23 north, range 5 west, Claiborne Parish. Ohio Oil Company is still securing leases in and around the old Haynesville shallow field, township 23 north, range 8 west, Claiborne Parish, where a deep test is planned this year. Arkansas Fuel Oil Company and Fohs Oil Company are leasing around the old Homer shallow field, township 21 north, ranges 6 and 7 west, Claiborne Parish.

North Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo Parish (Shreveport)—		
Harry Hanbury, Feist 1, 26-18n-14w	384	5556
Lake Prod. Co., Herndon 1, 34-18n-14w	288	5625
W. R. Nicholson Oil Co., De Soto 1, 26-18n-14w	*	5663
Caddo Parish (Pine Island)—		
Z. E. Robinson, Davenport 1, 36-21n-16w	200	2279
Caddo Parish (Vivian-Pine Island)—		
Manziel et al, Mabry-Files 1, 22-22n-16w	*	2641
Tippett Oil Corp., Thigpen-Herold 2, 34-22n-16w	*	2462
Whitehurst Dr. Co., Herold et al 1, 21-22n-16w	*	2705
De Soto Parish (Wildcat)—		
S. S. Alexander, Stell A-1, 5-12n-16w	10	3145
Webster Parish (Cotton Valley)—		
Magnolia, Coyle-Hodges 1, 21-21n-10w	800	8663

* Failures; † Junked; ¶ Million cu. ft. gas.

Louisiana permits

Shreveport.—Twenty-five drilling permits were issued last week by the Louisiana Conservation Commission of which 11 were in North Louisiana, divided among the following parishes: Caddo, 8; Claiborne, 1; Morehouse, 1; and Sabine 1. The 13 in South Louisiana were in the following parishes: Acadia, 1; Avoyelles, 1; Cameron, 1; Evangeline, 1; Iberville, 1; LaFourche, 2; Orleans, 1; St. Mary, 4; and Terrebonne, 1.

Arkansas Fields

LaFayette County wildcat awaiting tanks after oil show

El Dorado, Ark.—Indications that a new Glen Rose lime oil producing area near Lewisville, LaFayette County, was given last week when Erwin, Leach and East Texas Refining Company's G. E. Patten 1, C S½ NW NE 24-16s-24w, flowed oil during testing operations and then was shut in as tankage was erected.

Plugged back from 3604 feet to 3480 feet, this test had 5½-inch casing set at 3386 feet. The oil showing was logged in what corresponds to the Hill horizon of Rodessa, the upper of the Glen Rose producing strata in that area, the showing being from 3405 to 3423 feet. Operators drilled out plug to 3481 feet.

Swabbing was started at noon April 24 and continued until 6:45 p.m. when fluid had been lowered to within 600 feet of bottom. Casing pressure was 150 pounds. Tubing was left open during the night and the well headed twice. On the morning of April 25 the casing pressure stood at 525 pounds. It flowed into pits 15 minutes Tuesday before being shut in for tanks to be built. The oil was dark black in color and 30 gravity.

Erwin, Leach and associates' G. E. Patten 1, was reopened later after erection of a 100-barrel tank for testing purposes, and made 30 barrels the first hour through ½-inch choke and 8 barrels the second hour. Tubing pressure was 400 pounds and casing pressure 650 pounds. On a 15-hour gauge ending at 6 a.m., Thursday, April 27, the well produced 100 barrels of 38-gravity oil through 1-inch choke, after which it was shut in for additional storage.

Operators started moving derrick to a new location, ½-mile southeast of the well, the second test being Bell Estate 1, located 990 feet south and 66 feet east of NWc 19-16s-23w.

Location is on a farm-out from Ohio Oil Company and Shell Oil Company, who drilled a Permian lime failure that had considerable oil showings in this deeper lime formation, about one-half mile northeast of the present operation. The deep failure was believed on the downthrow side of the Lewisville-Stamps Fault and did not pick up the Glen Rose series.

The Magnolia (Kerr-Lynn) field, Columbia County, added 4 oil wells to boost its total to 21 producers, the largest number of Permian lime oil wells in any Arkansas field.

Western limits of the Village field, also a Permian lime area, were defined last week when Standard Oil Company of Louisiana abandoned J. Gunnels Unit 1, C SE NE 16-17s-19w, Columbia County, as a salt water hole in Permian lime at 7434 feet; elevation was 250 feet.

Tide Water-Seaboard Oil Company's J. A. Price 1, C NE SW 15-18s-19w, south offset to the discovery well and only producer in the Atlanta Permian lime field, Columbia County, topped Permian lime last week at 8207-11 feet and cored ahead at 8215 feet; elevation is 235 feet. This test on top of the Permian lime was 16 to 20 feet lower on this marker than the discovery well, Beene 1, completed last December as the first well in the field, owners being Tide Water-Seaboard Oil Company. This is the second test for the field. It topped James lime at 4144 feet, topped Travis Peak at 4555 feet and topped lower Marine at 5945 feet.

The test later topped Permian lime saturation at 8227 feet and cored ahead in saturation at 8232 feet.

Southeast of Atlanta and near the Union County line, F. W. Burford, J. F. Magale and Leon Russ have assigned several hundred acres of their block centering around Section 7-19-18 to Skelly Oil Company. It is reported the latter will have a large interest in a proposed Permian lime test to be drilled on this block. A previous test taken to Travis Peak about two years ago was a failure, but operators have kept the block.

South of McNeil in Columbia County leasing continues active in township 16, range 19. Four geophysical parties, those of Atlantic Refining Company, Phillips Petroleum Company, Standard Oil Company of Louisiana, and Tide Water Associated Oil Company, continue in Columbia County.

In Union County, Stanolind Oil & Gas Company has secured several tracts from Oliphant Oil Company in township 19, range 14, in its Hillsboro block. Around Section 21-17-16, where it recently had a seismograph unit, Lion Oil Refining Company is leasing. North of Shell Oil Company's block in Claiborne Parish, Louisiana, and across the Arkansas line, Barnsdall Oil Company is leasing around Sections 25, 26, 35 and 36-19-17, Union County.

Arkansas permits

El Dorado, Ark.—Five drilling permits were issued last week by the Arkansas Oil and Gas Commission, as follows: Columbia County—Atlantic Refining Company, L. Garrett E-1, C SE NW 24-17-20; Shell Oil Company, Glasgow 1, C NW NW 23-17-20; Glasgow 2, C SW NW 23-17-20; G. H. Vaughn, D. B. Baker Unit 1, C SW SW 14-17-20; Union County—Marine Oil Company, Fee 7, located 330 feet west and north SEc NE NE 20-18-17. Besides these Duncan and Givens transferred to A. W. Givens drilling permit for Williams 1, located 375 feet south and 420 feet east NWc NE NE 18-3s-15w, Saline County. This permit was originally issued to Duncan and Givens October 8, 1936.

Arkansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia County (Magnolia-Kerr-Lynn)—		
Atlantic, Garrett C-1, 13-17-20	720	7624
Garrett D-1, 24-17-20	334	7585
H. Vaughn, D. B. Baker 1, 15-17-20	810	7589
Southwood Oil Corp., L. A. Grelling 2, 23-17-20	432	7512
Columbia County (Village)—		
Standard, Gunnels Unit 1, 16-17-19	*	7434
Union County (Schuler)—		
Jones, Murphy et al, Morgan 3, 13-18-18	1440	7680
Morgan 4, 13-18-18	1200	7690
Lion, Calloway 1, 13-18-18	960	7665

* Failures; † Junked; ¶ Million cu. ft. gas.

Including SAVVY

If you operate in our territory, we're going the same way. Let's go along together. You want to get things done with economy and dispatch. We want to sell you what it takes. We started thirty years ago to accumulate the right things, including SAVVY. You can get along without us. We can get along without you. But the per-mile cost will be lower if we ride together.

PELICAN WELL TOOL & SUPPLY CO.

SHREVEPORT LOUISIANA

PELCO

Lake Charles—Houma—Converse
New Iberia—Monroe
Cotton Valley—Greggton
Magnolia—Houston

New Mexico Fields

Milnesand Ordovician prospect drilling hard formation. Southwest edge of Vacuum field in for more development.

Hobbs, New Mexico.—The presence of hard igneous rock, identified as granite, eliminates Shell Oil Company's Harwood 1, C S½ SE SE 27-7s-35e, Roosevelt County, as an Ordovician prospect for the Milnesand structure. The test was drilling at 7960 feet, attempting to fulfill an 8000-foot objective, and made only a few feet of new hole the past week. Harwood 1 failed to make a producer from nominal porosity and saturation logged in the Permian at the 4100-4200-foot level, and entered the Pennsylvanian series, which were generally hard and non-porous, near the 7500-foot level, with an elevation of 4200 feet.

Structural trend in the Milnesand area extends along a northwest to southeast course, based upon surface, subsurface and geophysical surveys. Harwood 1 established unusual structural relief, and for this reason it was considered an excellent prospect.

The finding of igneous rock at Milnesand adds weight to the theory that a buried granite ridge separates the West Texas-New Mexico Permian basin from the Texas Panhandle Permian oil and gas belt. This assumed ridge is believed to extend eastward from Milnesand across the Texas plains thence southeast to intercept the high granite found last fall in northeastern Garza County by Gulf Oil Corporation on the Swenson ranch. Long-term leases are being acquired by companies and individuals along this supposed buried ridge, using geophysical information to trace its course.

Repollo Oil Company's State 2-182, east edge of the Lovington field, Lea County, continued to produce about 34,000,000 feet of nitrogen after blowing out a week previous at 4108 feet. The company's oil well on the south end of the lease missed the air zone. Magnolia Petroleum Company's Selby 1, southeast outpost, was drilling at 4150 feet, having checked structurally low on the upper markers.

Authorization of 11 new tests for Lea County the past week equalled the number of completions for the same period. Six areas shared the new activity, with the sandy-lime belt in the east portion of the county receiving 7 locations.

Minor extension for the Monument field was recorded by Continental Oil Company et al in completing Britt 5-B-15, near C W½ NE SW 15-20s-37e, flowing 42 barrels of 32 gravity oil per hour natural through ¾-inch tubing choke. Situated 1200 feet east of nearest production, this well logged saturated lime at 3843-58 feet, with an elevation of 3558 feet. The showing made by this outpost may lead to more development on the east flank. The partnership has rigged up to drill Sanderson 5-B-14, NE NW SW 14-20s-36e, offsetting production on the opposite side of the field, which has a width of 5 miles at this point.

Southwest edge of the Vacuum field is in line for more development since The Texas Company's State 1-X, C NE NE 3-18s-34e, gauged 96 barrels of oil in 6 hours, flowing natural from lime at 4435-4700 feet. The gas volume was rated at 888 feet per barrel. The company's State 1-Z, an east offset, was drilling at 980 feet. Other new operations for the area includes Standard Oil Company of Texas' State 3-5, C SW NW 27-17s-35e, and Ohio Oil Company's State-Warn 2, account 3, C SE NW 33-17s-35e. Magnolia Petroleum Company's State 2-P, C SE SE 22-17s-35e, northeast outpost, failed to flow after acidizing and has installed a pumping unit. It was drilled to 4640 feet, or 701 feet subsea. The oil column filled to the 2500-foot level. The well will make its allowable as it pumped 70 barrels oil the first 3 hours.

Unitization of leases in the Eunice townside sector of the Hardy field is under consideration, according to reports. In the meantime operations have been started on Aloco Oil Company's Carson-Gulf 2-B, C NW SE 28-21s-37e, and Danglade-Clower et al's Eva Owens 2, near C W½ NW SW 34-21s-37e. In the Skelly pool, Skelly Oil Company's Ellen Sims 4, SW NE SE 3-23s-37e, has spudded with a machine.

Texas Pacific Coal & Oil Company's State 15-A, C NE NW 11-22s-36e, southwest outpost for the prolific lime pool between the Eunice and Penrose fields, is rated at 150 barrels daily at 3839 feet, or 278 feet sub-sea. Cable tool unit will be moved in to deepen before using acid. This well checked low on structure. Continental Oil Company's State 5-J-2, C SE SE 2-22s-36e, flowed 39 barrels of 36-gravity oil per hour natural through ¾-inch choke from pay at 3742-91 feet, with an elevation of 3511 feet.

In the Langlie area, Sam Weiner et al's Smith 4, NW SE SE 4-25s-37e, has spudded with cable tools. It will be a northwest offset to a 3750-foot failure drilled in 1936 and before operators became familiar with the completions methods needed to make producers from the thin pay areas in the sandy-lime belt. Other dry holes have since been discounted by offset producers. Anderson-Prichard Oil Corporation's Wells-Conoco 7, C NW SW 4-25s-37e, was drilling at 500 feet. New operations in the Mattix field includes Continental Oil Company et al's Jack 3-B-27, C NW SE 27-24s-37e, and Humble Oil & Refining Company's State 2-L, C SE NE 32-24s-37e.

New Mexico Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Green Bay Oil Co., Paton-Johnson 1-A, c se se 11-18s-31e	31	3775
Harding County—		
Harding County Gas Co., Hayas 1, 12-19n-30e	*	900
Lea County (Wildcat)—		
Fred Turner, Jr. et al, Lea County State Bank 1, c sw sw 30-14s-38e	*	5512
Lea County (Eunice)—		
M. D. Bryant-Drilling & Explo. Co., State-Republic 3, c s½ nw se 12-21-35	250	3893
Continental, State 5-J-2, c se se 2-22s-36e	936	3791
Texas Co., State-Lieu 17-H	240	3874
Lea County (Hardy)—		
Danglade & Clower, E. Owens 1, nw sw sw 34-21s-37e	275	3755
J. G. Menke et al, Alexander-Texas Co. 2, lot 11, 5-21s-37e	111	3788
Lea County (Langlie)—		
Anderson-Prichard, Wells-Conoco 5, c nw ne 5-25s-37e	360	3552
Lea County (Monument)—		
Continental et al, Britt 5-B-15, near c w½ ne sw 15-20s-37e	1008	3858
Great Western Producers, Bordages 2, nw se nw 33-19s-37e	125	3931
Lea County (Vacuum)—		
Ohio, State-Warn 1, Acct. 3, c se ne 33-17s-35e	960	4630
Texas Co., State 1-X, c ne ne 3-18s-34e	384	4700

*Failures; †Junked; ¶Mil. cu. ft. gas.

Rocky Mountain Fields

Lance Creek well makes record flow for mountain area

Casper, Wyo.— Largest completion to date in the Rocky Mountain district was brought in last week in the southern outpost sector of the Lance Creek field. Minnelusa Oil Corporation's H & M 1 on Lease 5, NW NE SE 7-35n-65w, came in for 500 barrels the first hour through 7-inch casing cemented in the top of the Leo sand at 5491 feet. Through a 2-inch flow line, it flowed 204 barrels hourly against 260 pounds back pressure. With an estimated 24-hour wide open capacity in excess of 12,000 barrels daily, the well outranks any previous producer to complete in Wyoming, Montana or Colorado, topping even the biggest producers of the Salt Creek and other principal fields in their prime.

The well had the top of the producing formation at 5490 feet and drilled sand to 5548 feet. Location is ¼ mile to the south of the Continental Oil Company's Dielman 1-B, former outpost producer on the southern edge of the field.

Activity in the field has been greatly stimulated by developments during the past several weeks. Twelve wells are active, including 2 locations.

In the Pinedale district, western Wyoming; The California Company's Government 1, CSW NE 14-31n-109w, which will drill to a contract depth of 8000 feet for a complete test of this area, is running rig foundations and will start building rig this week. Operators have moved in heavy rotary equipment used in drilling the company's record deep hole on the Nesson anticline in northwestern North Dakota in the summer of 1938.

Mountain States Completions
WYOMING

Company, Well and Location	Init. Prod. Bbls.	Depth
Niobrara County (Lance Creek Field)—		
Ohio Oil Co., Agnes Rohlff 3, sw se ne 32-36n-65w	2470	5300

*Failures; †Junked; ¶Mil. cu. ft. gas.

California Fields

Coalinga Nose extension indicates large oil area

Los Angeles.—Completion of Amerada Petroleum Corporation's Southern Pacific 17-7 wildcat 4½ miles northeast of the discovery well in the Coalinga Nose field, Fresno County, brings up arguments whether it is an extension or a new field; probably it is an extension as it is producing from Eocene at 8237 feet. Its initial yield was estimated to be 1500 to 3500 barrels of high-gravity crude along with approximately 8,000,000 to 10,000,000 cubic feet of gas per day. Seven-inch casing is cemented at 8022 feet. It is producing from the same horizon from which prolific producers, said to be capable of flowing 20,000 to 50,000 barrels daily, were completed within the past few months. However, due to rigid curtailment regulations, no well in this San Joaquin Valley field is expected to produce more than 250 barrels daily. If an extension, it will increase the field's length to about 8 miles, or 4½ miles additional from Superior Oil Company's Hight 1, last outpost well. Log of the well reveals that it took it 175 feet of the Avenal sand, while some of the early wells in the Gatchell area cored only 90 to 125 feet of sand.

Union Oil Company has 160 acres directly offsetting the well and between the well and Coalinga Nose, Bandini Petroleum Company has leases. Another 160 acres is held by Superior Oil Company, while Standard Oil Company, The Texas Company, Bankline Oil Company and Pacific Western Oil Company have properties in the immediate vicinity.

California Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Los Angeles County (Montebello)—		
Kern-St. Helens Properties, Monterey 30	694	7275
Union, La Merced 30	684	8468
Vulcan Oil Co., Nash 1, n e swc lot 200	708	6689
Los Angeles County (Torrance)—		
Lebow-McNee Oil Co., Kettler B-2	525	5148
W. E. McCaslin, Robertson 1	135	5167
Mooschekian Bros., Torrance 1	130	5170
Plymouth Oil Co., Plymouth 3	125	5155
The Greenspun System, Greenspun 1	340	5169
King Petroleum Co., King 1	*	5198
Los Angeles County—(Torrance Extension)		
Texas Co., Oakley 5	359	5241
Los Angeles County (Wilmington)—		
Padreson Oil Co., No. D-55-2	420	3670
Union Pacific, U. P. (LB) 105	no est.	4011
Orange County (Bolsa Chica Area)—		
Patos Dr. Co., Graham 1, c w½ s½ Block 4, 21-5-11 (W)	*	6673
Orange County (Yorba Linda)—		
Shell, Stern 1A, n e swc 23-3-9	*	1661
Kern County (Belridge Area)—		
Honolulu, Michelssen 63, n w e¼c 14-28-20 (W)	15	1687
Kern County (Wasco-Semitropic Area)—		
Standard, Mushrush 2, s w e¼c 7-27-24 (W)	6144	13125
Kern County (Kern River)—		
D.B.K. Co., No. 3, n e swc w½ nw¼ nw¼ 34-28-28	15	475
Kern County (Mt. Poso)—		
Ring Oil Co., Rodgers-Jones 4, n e s¼c 29-26-28	400	1773
Fresno County (Coalinga Area)—		
General, Esperanza 83, 6-20-15 (W)	48	1704
Foreign Oil Co., Pacific States Annex 6, s w nec 6-21-15 (W)	25	2540
Ventura County (Rincon)—		
Rincon Dev. Co., Permit 82-4, s w nec Permit 82	140	2077
Ventura County (Ventura Avenue)—		
Tide Water, Lloyd 105	333	6337

* Failures; † Junked; ¶ Million cu. ft. gas.

Shell Oil Company is within striking distance of the deep hole record with KCL B-37-4, Section 4-30-25, in the Canal field, outside Bakersfield. It is making progress with the drill below 13,600 feet, with gas-cut mud in evidence, although no oil has been found. This test is trying out the Vedder zone. Standard Oil Company's Elrich Community 1 in the Greeley field is another deep hole that is below 13,500 feet. Markers indicate it may have topped the Avenal or at least to be nearing it. Most of the work in the Greeley field has been outpost or wildcat locations.

A joint wildcat test being drilled six miles southeast of Wasco, Kern County, is reported to have logged a few feet of coarse sand with bottom of the hole below 12,800 feet. This project is being drilled by Union Oil Company in conjunction with Tide Water Associated Oil Company, and geologists are of the belief that it might be a stringer of sand below the point at which the Rio Bravo sand should have been encountered. Continental Oil Company and Seaboard Oil Company control the leases on which the test is being drilled.

Arkansas crude to Canada

Standard Oil Company of Louisiana is reported to have contracted with British American Oil Company of Canada and with the Columbia County Pipe Line Company whereby approximately 86,500 barrels of crude from the old Couch area, Columbia County, Arkansas, will be shipped by tanker from Port Arthur, Texas.

Michigan Fields

Big well changes trend of Grandville drilling

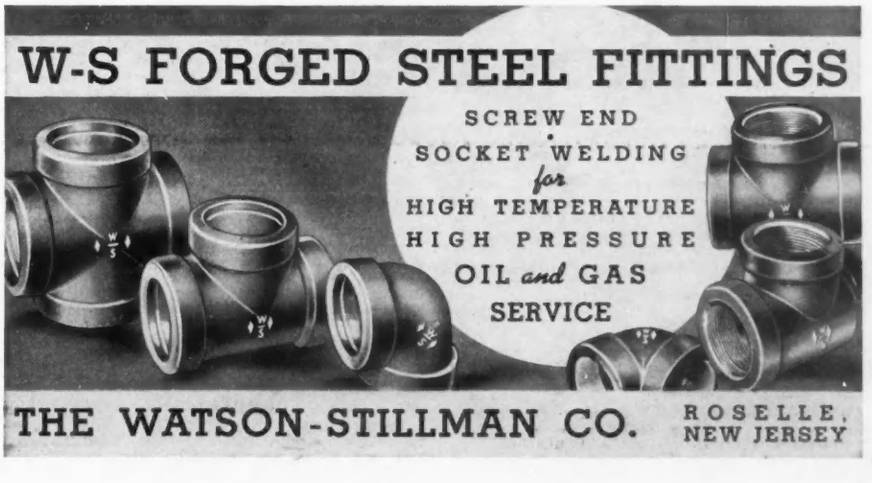
Mt. Pleasant, Mich.—First prolific flow production was established last week in the Grandville field, Kent County, two miles west of Grand Rapids, when Swanson Consolidated Oil Company's Fletcher 1, Section 32-7n-12w, Walker Township, initialed 2948 barrels the first 24 hours with an estimated 100 to 300 barrels lost in dykes. Offset on the north and west with light wells, the well is expected to bring a big play off the east and south, as yet unprospected. The well showed 32 feet higher on Traverse than an offset pumper 200 feet to the north. Traverse was topped at 1725 feet and hole bottomed at 1766 feet. Of 10 wells previously drilled in the field, opened in 1938 by a 50-barrel well a half mile west, 700 barrels after acid had been the top rating.

Shallow fields contributed the major news of the week with Michigan Cities Natural Gas Company's Strong 2, Sectoin 12-1s-15w, Columbia Township, Van Buren County, rating an estimated 3200 barrel potential after acid at 1176 feet. Potential was based on 849-barrel gauge in 5 hours. Another test in Van Buren County rated a 2000-barrel potential.

Michigan Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Lima Oil Corp., Hendrixson 1, sw nw ne 15-3n-12w	*	1776
J. E. Drury, Lampen 1, e n n sw 32-4n-14w	*	1645
Barry County—		
Schelling et al, Drake 1, nw sw ne 11-1n-8w	*	1968
Darke Bros., Stoke 1, sw sw sw 31-4n-10w	*	1980
Cass County—		
Anna Prather, Jones 1, sw se ne 13-5s-13w	*	1115
Clare County—		
Turner Pet. Co., Wheeler 2, ne nw 34-19n-6w	900	3907
Kent County—		
Swanson Oil Co., Fletcher 1, se sw se 32-7n-12w	3100	1766
Voorhees Dr. Co., Story 2, ne sw sw 32-7n-12w	110	1889
Smith Pet. Co., Whalen 3, ne se sw 32-7n-12w	25	1826
Van Buren County—		
F. P. Hurt, Healy 3, sw ne se 7-1s-14w	*	1227
O. O. Borden, Stewart 4, sw nw se 7-1s-14w	215	1203
Marshall Bauman, Rogers 5, se sw sw 8-1s-14w	400	1211
W. E. Dotson, Rogers 2, sw nw sw 8-1s-14w	*	1236
Bridger Basin, Meek 3, nw sw ne 17-1s-14w	600	1238
Fisher & McCall, Lundberg 1, se nw nw 16-1s-14w	75	1221
H. B. Cannon, Babcock 3, sw nw nw 17-1s-14w	*	1245
R. T. E., Clinkenberad 3, sw nw nw 17-1s-14w	45	1229
Caldwell, Leahy 2, se nw nw 18-1s-14w	40	1204
F. B. Ruby, Foster 1, nw se ne 11-1s-15w	100	1168
Harry Leman, Smith 1, sw nw ne 11-1s-15w	75	1183
Michigan Cities, Strong 2, se ne ne 11-1s-15w	3200	1176
Sprenger Bros., Ford 1, nw ne sw 12-1s-15w	60	1185
J. W. McIntosh, Henry 1, sw nw nw 12-1s-15w	600	1179

* Failures; † Junked; ¶ Million cu. ft. gas.



WILDCAT REPORT
New Starts and Completions

STATE	WILDCATS STARTED		WILDCAT TESTS COMPLETED							
			Total		Oil		Gas		Dry	
	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year
Alabama	2	3	...	1	...	...	...	...	...	1
Arkansas	2	11	...	6	...	...	...	...	...	6
California	9	89	4	46	3	15	...	...	1	31
Colorado	...	...	...	3	...	...	...	...	...	3
Georgia	...	2	...	...	...	...	...	...	...	...
Illinois	11	162	5	102	1	7	...	...	4	95
Indiana	...	10	...	5	...	1	...	1	...	3
Kansas	1	56	7	60	3	22	...	1	4	37
Kentucky	...	5	...	8	...	4	...	...	...	4
Louisiana	1	44	1	28	1	6	...	...	...	22
North Louisiana	1	16	1	9	1	3	...	...	...	6
South Louisiana	...	28	...	19	...	3	...	...	...	16
Michigan	4	62	2	94	...	7	...	...	2	87
Mississippi	...	3	...	...	...	...	...	...	...	...
Missouri	...	1	...	...	...	...	...	...	...	...
Montana	...	1	...	...	...	...	...	...	...	...
New Mexico	1	13	1	3	...	...	...	...	1	3
New York	...	...	...	2	...	...	...	1	...	1
Oklahoma	6	64	2	52	...	7	...	2	2	43
Ohio	...	2	...	6	...	1	...	...	...	5
Pennsylvania	...	1	...	2	...	...	...	...	2	...
South Dakota	...	1	...	...	...	...	...	...	...	...
Texas	27	318	16	335	3	34	...	2	13	299
East Texas	1	39	...	28	...	1	...	...	...	27
North Texas	10	45	7	79	1	16	...	1	6	62
Gulf Coast	4	38	1	27	...	2	...	...	1	25
Panhandle	...	2	...	4	...	...	...	...	...	4
South Texas	8	125	5	144	1	10	...	...	4	134
West Texas	4	69	3	53	1	5	...	1	2	47
Wyoming	...	1	...	...	...	...	...	...	...	...
Total U. S.	64	854	38	753	11	107	...	8	27	638

ALABAMA

FIRST REPORTS

Lawrence County—Mid-Southern Pet.'s W. R. Jackson 1, located 150 ft s of n l and 500 ft w of e line 30-7-6, spudded coring Hartselle sand 266-278 ft. Mid-Southern Pet. Co. et al's Rob Jackson 1, sw se 11-7-7, location abandoned. New lcn 3 mi se of abnd lcn.

ARKANSAS

FIRST REPORTS

La Fayette County—Erwin, Leach et al's Bell Estate 1, located 900 ft s and 66 ft e nwc 19-16s-23w, moving in materials.

Saline County—A. W. Givens' Williams 1, nwc ne ne 18-3s-15w, moving in materials. (Permit issued first to Duncan & Givens Oct. 8, 1936).

CALIFORNIA

FIRST REPORTS

Los Angeles County—Gregfield Oil Co.'s Gregg 1, 100 ft n 100 ft e c/ls Granada and Beverly Blvd., Whittier area, rig.

Kern County—Standard's Jewett 2, 2310 ft s 330 ft w nec 16-31-29, Arvin area, grade. Allen Auman's Lincoln-Theta 1, 165 ft s 330 ft e nwc sw sw 12-26-20, Lost Hills area, dr 560 ft. Standard's T.G.&T. 2, 335 ft n 335 ft e c 12-25-23, Trico area, lcn. Geo. F. Getty's Janssen 1, 330 ft n 330 ft w c 7-27-24, Wasco-Semitropic area, foundation. Continental's KCL F-1, 1785 ft n 555 ft w sec 5-10-21, San Emigdio area, rur.

Santa Barbara County—O. C. Field Gasoline Corp.'s Corp. 1, 560 ft n 100 ft e w¼c 21-9-33, Orcutt area, ru to deepen. Fred Cole's Ferrini 1, 550 ft n 2000 ft w sec of Ferrini ppty in 15-10-35, Guadalupe area, rig.

Sutter County—Buttes Oilfields, Inc.'s No. 5, 2050 ft n 875 ft e swc 1-15n-1e, Marysville Buttes area, ru.

COMPLETIONS

Orange County—Patos Dr. Co.'s Graham 1, c w½ s½ Block 4, 21-5-11, Bolsa Chica area, abnd gray sand 6673 ft, top Repetto approx. 4150 ft, top Puente 6375 ft.

Kern County—Honolulu's Michelssen 63, 993 ft n 990 ft w e¼c 14-28-20, Belridge area, 140 ft perf ldd, 1650 ft, pumping 15 B/D 12.0 grav 50.0%, td 1687 ft. Standard's Mushrush 2, 1320 ft s 330 ft we¼c 7-27-24, Wasco-Semitropic area, potential 6144 B/D, 36.0 grav 0.6%, top oil sand 13,080 ft, td 13,125 ft.

Fresno County—General's Esperanza 23, 6-20-15, Coalinga area, perfs open 1354-1360 ft, I.P. and P.P. 48 B/D 20% cut, td 1704 ft.

ILLINOIS

FIRST REPORTS

Clay County—Phillips Petroleum Co. and Jeffries-Olson's J. R. Murvin 1, sw ne 22-5n-7e, 2 mi east and ½ mi south of Bible Grove, rig. Hunt s Harper 1, se ne nw 10-3n-6e, dr.

Clinton County—W. C. McBride, Inc.'s Keister 1, se sw ne 26-2n-1w, rig.

Coles County—W. R. Miller's McConnell 1, sw nw nw 23-11n-10e, rig.

Marion County—W. O. Morgan and Hull's Dawkins 1, sw se sw 15-2s-1w, dk.

Saline County—Thomas McNear's Miller 1, c nw ne 23-8s-6e, rig.

Sangamon County—Hal Blackman's G. W. Sample 1, nw se ne 11-15n-3w, rig.

Shelby County—A. M. Hughes et al's Fluge 1, nw ne nw 34-10n-5e, rig.

Wayne County—Sloan Oil Trust's Ben Crews 1, nw ne se 6-2s-9e, rig.

White County—Sun Oil Co.'s Ford 1, nw ne ne 18-5s-14w, loc.

COMPLETIONS

Jasper County—Bur-Kan Oil Co. and Kingwood Oil Co.'s Harrison 1, c w sw sw 2-7n-10e, Hunt tnp, top St. Louis 2692 ft, abnd 2711 ft.

Lawrence County—Joe Kesl et al's Anna Jones 1, c e 7-4n-10w, Russell tnp, top McClosky 1509 ft, abnd at 1701 ft.

Macon County — Snake Hill Development Co.'s J. Dipper, ne se nw 17-16n-2e, Decatur tnp, top Silurian 2060 ft, abnd 2125 ft.

Marion County — Arthur "Tex" Harvey's Salem Building & Loan 1, c n½ ne se 33-3n-2e, Tonti tnp, top McClosky at 2161 ft, pumped 200 bbls oil and 25 bbls salt water in 24 hours after treatment with 1000 gallons acid, td 2180 ft.

Wabash County—Longhorn Oil Co. & Renwar Oil Co.'s Edith B. Helm 1, se se nw 15-3s-14w, Compton tnp, top St. Louis 3038 ft, abnd 3058 ft.

KANSAS

FIRST REPORTS

Barton County—Amerada's Gagelman 1, c ne ne 23-19-15w, pits.

COMPLETIONS

Barton County—Gulf's Dolecheck 1, cnl ne sw 24-16-12w, 2½ mi e Ehly pool, top Anhydrite 780 ft, top Lansing 3709 ft, top Conglomerate 3334 ft, abnd 3400 ft. General et al's Miller 1, se sw se 17-16-13w, ½ mi s S. Trapp pool, top Anhydrite 932 ft, top Topeka 2875 ft, top Lansing 3184 ft, top Arbuckle lime 3418 ft, abnd 3448 ft. Amerada's Merten 1, c nw nw 14-19-15w, new horizon Kruckenberg pool, top Anhydrite 885 ft, top Ft. Riley 1900 ft, top Lansing 3204 ft, td 3470 ft, pb 3395 ft, completed, 437 bbls, 27.4 gr, Lansing production.

Rice County—Spurrier et al's Cary 1, ne nw nw 30-18n-8w, 5 mi w Geneseo pool, top Anhydrite 390 ft, abnd 1680 ft. Phillips' Proffitt 1, cel ne ne 8-20-9w, 1 mi e Chase pool, top Lansing 2925 ft, top Simpson shale 3234 ft, top Arbuckle lime 3244 ft, td 3258 ft, shot 15 quarts, completed, 177 bbls.

Sedgwick County—Ace Oil Co.'s Black 1, nw se ne 2-25-1e, new horizon Goodrich pool, top Lansing 2280 ft, 8-inch csg 2165 ft, completed, 1975 bbls, 39 gr, Lansing production.

Stafford County—E. H. Moore's Secrest 1, c s½ se nw 21-25-11w, ½ mi sw Neola pool, top Topeka 3020 ft, top Lansing 3495 ft, top Mississippi 3845 ft, top Kinderhook 3900 ft, top Viola 3987 ft, top Simpson shale 4080 ft, top Arbuckle lime 4157 ft, abnd 4165 ft.

NORTH LOUISIANA

La Salle Parish—Adams O&G Co.'s (Adams-La. Co.), Fee 1, se ne sw 1-6n-2e, moving in materials.

COMPLETIONS

De Soto Parish—Samuel S. Alexander's Stell A-1, ne ne 5-12n-16w, elev 252 ft, top Washita 2710 ft, est 2 mil ft some oil at 2710 ft, drilled deeper to Paluxy, flowed estimated 5 bbls oil day by heads, shot with six sticks dynamite, completed 10 bbls oil day, td 3145 ft, zone tested being at 3046 ft.

SOUTH LOUISIANA

COMPLETIONS

Iberia Parish—Texas Co's Petit Anse, Avery Island salt dome, 8920 ft s and 3926 ft e of nwc sec 33 in sec 59-13s-6e, abnd 11,155 ft.

MICHIGAN

FIRST REPORTS

Isabella County—C. W. Teater's Tillman 1, ne se nw 23-15n-5w, dr.

Newaygo County—C. D. Hoffman's Benjamin 1, sw nw sw 14-11n-14w, rig.

Van Buren County—R. W. Bloss' Schemenaurer 1, se se se 5-2s-15w, lcn. Red-Man Oil Co.'s Griffen 1, nw nw nw 29-4s-14w, rig. Rowmor Corp.'s Kuhn 1, se nw ne 36-1s-17w, rig.

COMPLETIONS

Barry County—Schelling et al's Drake 1, nw sw ne 11-1n-8w, Traverse 1907 ft, sw 1953 ft, td 1968 ft. Darke Bros.' Stoke 1, sw sw sw 31-4n-10w, Traverse 1886, abnd 1980 ft.

Cass County—Anna Prather's Jones 1, sw se ne 13-5s-13w, abnd 1115 ft.

NEW MEXICO

FIRST REPORTS

Dona Ana County—Picacho O&G Synd.'s S. B. Armstrong 1, c nw ne 15-23s-1w, sp.

COMPLETIONS

Lea County—Fred Turner Jr. et al's Lea County State Bank 1, c sw sw 30-14s-38e, elev 3808 ft, top anhydrite 2190 ft, top Yates 3200 ft, abnd in hard lime 5512 ft.

OKLAHOMA

FIRST REPORTS

Comanche County—Richards et al's Anderson 1, ne nw se 30-4n-11w, dr 780 ft.

Lincoln County—Fain Dr. Co.'s Wertman 1, swc 12-15n-4e, lcn. Villines et al's Marshall 1, nw ne ne 28-15n-4e, rig. Cooper Drilling Co.'s Johnson 1, nec nw 32-15n-5e, lcn. Starr's Morrow 1, sec sw 28-15n-6e, pits.

Pottawatomie County—Trigg's Johnson 1, sw nw sw 19-6n-5e, pits.

COMPLETIONS

Beckham County—McLaughlin et al's Durham 1, c sw 36-8n-24w, 7 mi s Sayre pool, top Dolomite 1578 ft, abnd 2017 ft.

Comanche County—Kerr-Lynn Oil Co.'s Laging 1, c ne sw 30-4n-9w, 2 mi n Sterling, top Wellington 2700 ft, top Pontotoc 2950 ft, abnd 6500 ft.

SOUTH TEXAS

FIRST REPORTS

Colorado County—J. S. Fabriguze and C. L. Nabers' Frazar 1, 660 ft e line of 840-ac tr James Earle sur, 200 yds se of Eagle Lake, lcn.

Duval County—Argo Oil Corp.'s Benavides 1, 1026.5 ft w line, 466 ft s line of 200-ac lse, P. Benavides sur 238, lcn.

Guadalupe County—Trio Oil Co.'s Jahns 1,

600 ft s line, 150 ft e line of 100-ac lse, J. K. Davis sur, Ab-15, lcn.

Jim Wells County—R. A. Irwin et al's Garcia 1, 466 ft nl, scales 1025 ft w line of sec 102, R. J. Kleberg sur, Ab-273, lcn. R. S. Waldron's Welhausen 1, 1375 ft s line, 2900 ft w line, George Rounds sur, Ab-407, prep move on.

Live Oak County—Fred W. Shield's Adams 1, 330 ft w line, 330 ft n line of blk 2997, sec 28, Dr. C. F. Simmons Farm Lots subd, moving in materials.

Starr County—H. C. Bishop and J. O. Moss' Ricaby 1, 330 'ft s line, 330 ft w line out of w½ porcion 83, lcn. Johnson and Owens' Ricaby 1, 330 ft s line, 330 ft w line of 60-ac lse, por 83, Jurisdiction of Carmargo, moving in materials.

COMPLETIONS

Calhoun County—Continental Oil Co.'s Welder 1, 17,000 ft nw line, 6500 ft ne line, Euserio Hidalgo gr, Ab-21, and in sec 8, blk E, abnd at 6012 ft.

Duval County—Bridwell Oil Co.'s Welder 1, 330 ft s line, 990 ft w line, Anna Collins sur 552, dry and abnd at 2871 ft.

Jim Wells County—Ike W. Howeth and Lewis Prod. Co.'s Adams 1, 777 ft sw line, 150 ft se line of 250-ac lse, sec 122, William Adams sur, Ab-6, hard brkn sand with oil, 3344-3410 ft, snd, 4627-31 ft, lime cap, 4461-66 ft, and sand 4666-74 ft, flowed 135 bbls pipe line oil per day, total depth 4674 ft. (45.2 gravity oil, bottom hole pressure 1900 pounds).

Kenedy County — Humble Oil & Refining Co.'s Kenedy 1, approx. 23,600 ft w line, 37,000 ft s line of e line, Penascal gr, junked and abnd at 7920 ft, stuck drill pipe.

Webb County—Navarro Oil Co.'s Benavides 1, 330 ft nw line, 330 ft sw line, blk 11, sec 1, Josefa Cuellar gr, abnd at 3508 ft.

WEST CENTRAL TEXAS

Callahan County—Bayou O&G Co.'s W. E. Jones 1, 330 ft out of sec e½ sec 84, Comal C.S.L. sur, dr 210 ft.

Palo Pinto County—Hickok & Harry Reynols' H. H. Johnson 1, 400 ft n and 210 ft w of m/n ne cor of C.E.P.I.&M. sur No. 7, A-1572, but in Bennett McNelly sur, A-329, lcn for 2300-ft test.

Stephens County—The Falcon Co.'s R. T. Hopper 1, 6100 ft fr s and 950 ft fr w lines sec 1142, TE&L Co. sur, mim.

COMPLETIONS

Callahan County—L. A. Warren et al's B. P. Cozart 1, Matilda Cherry sur, oil sand 1660-75 ft, shot 14 qts nitro and pumped 60 barrels initial.

Palo Pinto County—Gordon et al's Conway 1, Reudosa Irrigation Co. sur A-1195, top Ellenberger 3991 ft, abnd in hfw 4026-35 ft.

WEST TEXAS

FIRST REPORTS

Gaines County — Humble O&R Co.'s W. T. Caswell 1, c sw sw PSL sec 10, blk A-24, cem sur pipe.

COMPLETIONS

Irion County—J. W. Ellis et al's Sol Mayer 1-a, 330 ft out of swc ne¼ T&P sec 240, blk 1, top Yates 1330 ft, abnd 2438 ft.

Jones County—R. R. Carroll et al's G. Herndon 1, 2375 ft fr n and 10,450 ft fr e lines of Goliad C.S.L. sur No. 359, top Noodle Creek lime 2625 ft, used 15,000 gals acid by stages in broken pay 2651-77 ft, and 2880-91 ft, abnd 3375 ft.

EAST TEXAS

FIRST REPORTS

Henderson County—Dulup Oil Co.'s S. B. Cornelius 1, 330 ft out of se cor of w-100-ac of 200-ac tract, Elizabeth Washburn sur, 3½ mi nw Stockard, rur.

NORTH TEXAS

FIRST REPORTS

Archer County—Bridwell Oil Co.'s W. O. Davis 1, 1050 ft fr s and 1350 ft fr w lines sec 1838, TE&L Co. sur, dr 760 ft. Riner-Fain & Stilley's R. C. Kinder 1-A, 1350 ft fr n and 500 ft fr w lines lot 46, blk 5, Clark-Plumb sur, rur. Stanford & Jackson's B. D. Ikard 1, 1380 ft fr n and 1050 ft fr e lines lot 3, blk 5, Clark-Plumb sur, dr 520 ft.

Clay County—Harvey Drl. Co. et al's Emil Michna 1, 2162 ft fr se and 720 ft fr sw lines sec 28, J. H. Johnson sur, A-853, 1½ mi s Charlie, lcn for 1400-ft test. L. T. Burns and Consolidated Oil Co.'s Scaling 1, 330 ft out of sec sec 6, HT&B Ry. sur, A-879, lcn.

Cooke County—Continental Oil Co.'s Mrs. Mary Gwynn 1, 200 ft out of nec of 210-ac tr, F. J. Lindheimer sur A-516, 1 mi w Lindsay, lcn for 2000-ft test.

Grayson County — Prince Bros.-Strube & Barton's M. Williams 1, 1280 ft fr n and 1000 ft fr e lines lse and S. Nix sur A-908, 2 mi ne Van Alstyne, lcn. Sinclair Prairie Oil Co.'s Mollie M. Williams 1, 275 ft out of nec lse, or 528 ft fr n and 1840 ft fr e lines of R. H. Sowell sur A-1087, lcn for 5000-ft test.

Wichita County—Jas. S. Smith et al's W. L. Doyle 1, 155 ft fr e and 1000 ft fr s lines of DL&C Co. sur A-718, sp. Westbrook Oil Corp.'s L. F. Ramming 1, 2042 ft fr s and 1704 ft fr w lines of tract, H. Hsatie sur A-92, rur.

COMPLETIONS

Archer County—Bridwell Oil Co.'s A. J. Ikard 1, 500 ft fr n and 2600 ft fr w lines sec 1890, TE&L Co. sur, Gunsite 1014-25 ft, abnd 1101 ft. White-Duncan et al's G. D. Prideaux 1, 150 ft out of nec of tract, sec 1836 TE&L Co. sur, Gunsite 973-75 ft, abnd in hfw 1020-24 ft.

Baylor County—J. W. Baldwin et al's W. B. Mills 1, 300 ft out of swc of n-20-ac of ne¼ sec 2413 TE&L Co. sur, trace o&g 1405-1409 ft and abnd.

Grayson County—O. L. McDougal et al's Fannie Jackson 1, 300 ft fr n and 160 ft fr e lines of 64-ac tract, H. Coffee sur A-204, abnd 582 ft.

Montague County—Joe Benton and Holmes' Joe Bowers 1, 450 ft fr e and 400 ft fr s lines sec 55, MEP&P Ry. sur A-528, broken middle Strawn pay 2887-2958 ft, shot 50 qts nitro 2900-28 ft, pumped 76 bbls initial. Seitz-Comegys & Seitz, Inc.'s L. K. Geurin-Texas Co. 1, 330 ft fr s and 1025 ft fr w lines of R. H. Grimes sur A-288, lime 2953-3031 ft, abnd in schist and conglomerate 3718-30 ft.

Wise County—H. Jackson et al's F. H. Neely 1, 976 ft w of swc BBB&C sur A-117, but in blk 29, Matagorda C.S.L. sur, abnd 498 ft.

TEXAS GULF COAST

FIRST REPORTS

Ft. Bend County—Atlatl & Adams Oil & Gas Co.'s Stancliff 1, nw flank of Sugarland, 330 ft n and e of 70-acre tract in E. Alcorn sur, lcn. Royal Oil & Gas Co. and Pat Rutherford's Bertrand 1, e of Richmond, 1100 ft n and 2800 ft w of sec of J. Wilkens sur, lcn.

Madison County—R. L. Peveto et al's McWhorter 1, sw of Madisonville, 5139 ft fr w line and 5280 ft fr n line of Boatwright League, lcn.

Waller County—M. K. Culver's Dodd 1, se of Hempstead, 870 ft s of n line and 2325 ft e of w line of sur, lcn.

COMPLETIONS

Brazoria County—Housh & Thompson's Allen 1, Iowa Colony area, 480 ft fr w line and 226 ft fr n line of 10-acre tract in K. Ehrman sur, abnd 7012 ft.

Letters to the Editor

DEAR SIR:

I think that you will welcome a criticism of an article by Mr. Post, in your April 17 issue, entitled "Distillate Production in South Texas."

There has been and still exists a great misunderstanding of the economics of recycling operations. In Mr. Post's article he gives as the third economic reason for recycling operations the higher allowable production. Mr. Post overlooks the fact that to obtain his several hundred barrels of production per day will require a minimum of two output wells, one input well, and a very expensive processing plant. On typical South Texas distillate this represents an investment of approximately $300,000. Comparing such an investment to that of an oil well with an allowable of 50 barrels per day and drilled at a cost of $30,000, the oil well produces 50 barrels per $30,000 investment whereas the distillate project produces 52 barrels per $30,000 investment.

I take the liberty of calling this to your attention because certainly the facts are unlike the representation and this, of course, only adds to the confusion existing today regarding this relatively new production technique.

P. C. DIXON
Parker, Foran, Knode & Boatright,
Corpus Christi.

DEAR SIR:

Your work in presentation of the extent of educational work being done in petroleum engineering [THE OIL WEEKLY, March 6] is highly commendable. I had thought that I knew reasonably well that schools were actively engaged in this work and the material they were covering, and I was surprised to find there is much more work being done than I had realized.

GILBERT W. NOBLE,
Assistant Professor
Petroleum Engineering.
Missouri School of Mines and Metallurgy,
Rolla, Missouri.

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An outline of the physical properties of fragmental aggregates and of their mineral constituents, this book is a laboratory manual and guide for students, geologists, petroleum engineers, chemical engineers and microscopists—in fact for all those interested in a practical treatment either of identity or of size and shape relationships of fragmental rocks.

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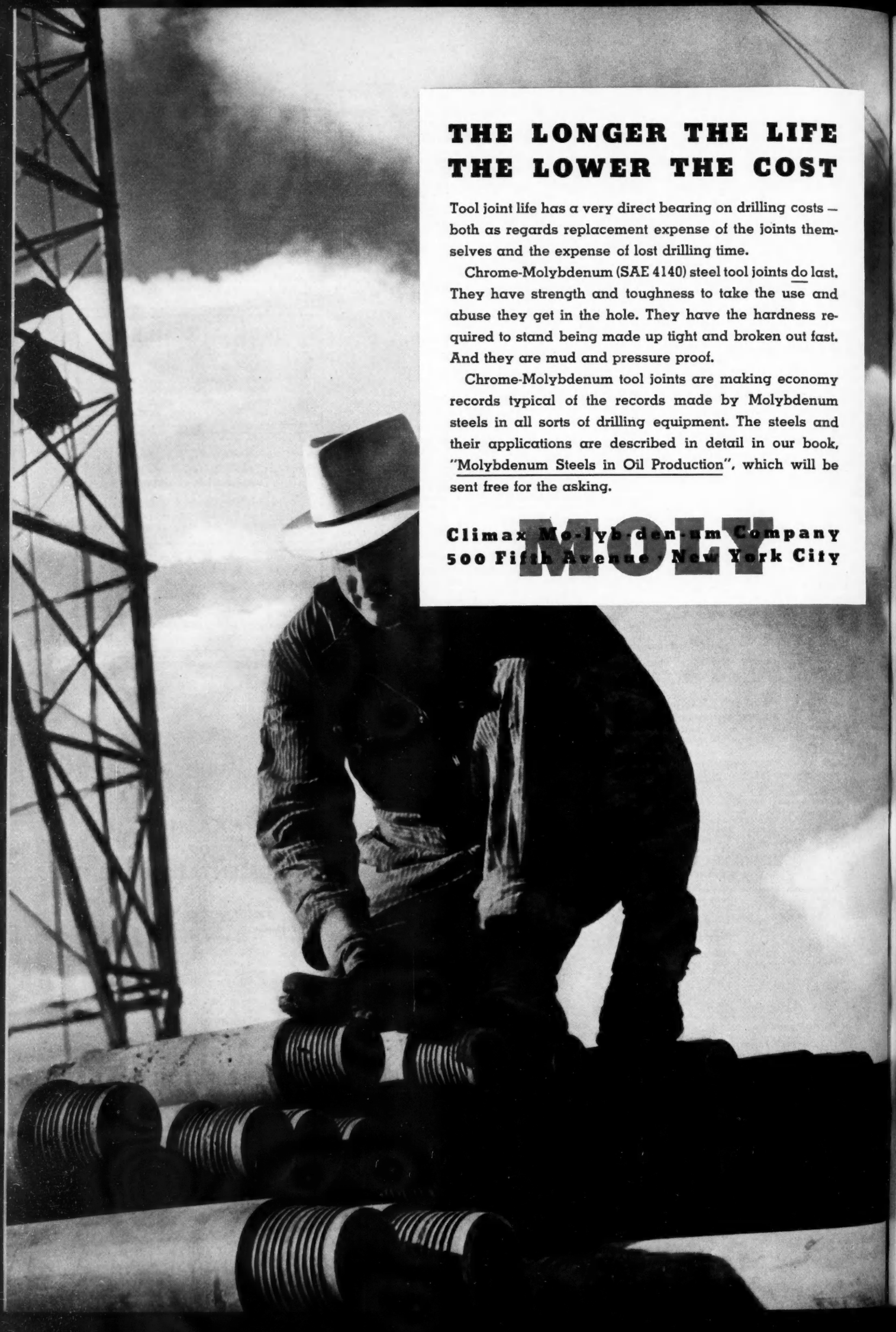

THE LONGER THE LIFE THE LOWER THE COST

Tool joint life has a very direct bearing on drilling costs — both as regards replacement expense of the joints themselves and the expense of lost drilling time.

Chrome-Molybdenum (SAE 4140) steel tool joints do last. They have strength and toughness to take the use and abuse they get in the hole. They have the hardness required to stand being made up tight and broken out fast. And they are mud and pressure proof.

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MOLY

NOTES FOR THE Equipment Buyer and User

Safety Shoe

LEHIGH SAFETY SHOE COMPANY

Lehigh Safety Shoe Company, Allentown, Pa., announces a line of steel toe box safety shoes soled with duPont "Neoprene", highly resistant to oils, greases, and most caustics and solvents

Lehigh Safety Shoe

which cause rapid rotting of leather and rubber soles. One safety shoe pattern carries a full Neoprene sole, while two others are soled with cord moulded in Neoprene to provide additional traction on slippery surfaces. The shoes are being sold under the trade name "Oil Fighters", and are fully described in a new catalog issued by the above firm.

Electrode

THE LINCOLN ELECTRIC COMPANY

A new arc welding electrode for use with alternating-current transformer type welders which have low open circuit voltage is announced by The Lincoln Electric Company, Cleveland, Ohio.

The new electrode, known as "Readyweld," is a low-carbon steel rod with a heavy extruded shielded arc coating possessing properties which assure arc stability and easy re-striking of the arc with small low-voltage transformer welders.

"Readyweld" is intended for general welding and repair work on light gauge sheet steel. The electrode provides weld metal which possesses high strength and ductility. Because of its desirable arc characteristics, the electrode permits easier and better welding in the type of work for which it has been developed, the maker says.

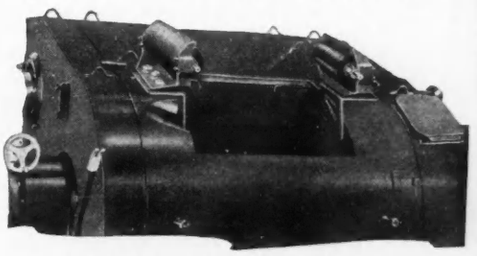
Although designed primarily for use with alternating current transformer welders of low open-circuit voltage, "Readyweld" also operates well with direct current negative plants.

The electrode is manufactured in 3/32-inch diameter, 12-inch lengths, packed in 25-pound containers.

Wire Line Turn Back

E. M. SMITH COMPANY

The Grizzly Wire Line Turn Back, manufactured by E. M. Smith Company, Los Angeles, consists of a tough rubber roller operating in a metal housing which can be either welded or



Grizzly Wire Line Turn Back

bolted to the drawworks guard at a 90° angle to the direction of line travel, so that the wire line rests lightly against the rubber roller. A simple adjustment feature permits proper tension to meet specific conditions.

It is specially designed to turn back the wire line as it reaches each end of the drum, with just enough pressure to make it start back smoothly and evenly; preventing it from piling up, crawling or overlapping. It prevents the line from dragging against the sharp edge of the guard of the drawworks, sand reel, etc., thus eliminating a large percentage of the wear and breakage of cable strands. It also protects the line from injury due to terriffic blows against drum flanges, as frequently occurs when the whip is not eliminated.

The steel core of the tough rubber roller is packed with a high quality grease, eliminating any necessity for lubrication. The ball bearings at each end permit the roller to spin freely, easily and smoothly at the slightest contact with the wire line.

The manufacturer claims that this product will prove extremely inexpensive insurance against excessive wire line wear, costly replacements, and dangerous accidents.

Insert Pump

BRADFORD MOTOR WORKS

The B-M-W Fluid Lifter Insert Pump, figure 1, designed and constructed for difficult pumping conditions, is the latest development offered by Bradford Motor Works, Bradford, Pa.

This pump is built with a stationary plunger and reciprocating outside tube. It is installed in and removed from the tubing with the sucker rods. Where desired it is furnished with top hold-down, in which case the plunger is reciprocated in a stationary outside tube.

Balls and seats are B-M-W Chromard (Stainless Steel) throughout, crowns being the newly developed two-way non-magnetic type. Precision machine work on the plungers and fittings assures efficient and durable performance when handling low- or high-gravity oil from deep or shallow wells. Sand and water are handled most effectively.

The plunger fitting comprises six units which are interchangeable. Thus figure 1 is fitted with a plunger having three sleeve units, two composition ring units, and one cup unit, the latter being divided into two parts. Where desired the plunger may be assembled with six sleeve units, six cup units, or six composition ring units, or with any desired combination of these units. Plunger sleeves are made from highest quality molybdenum iron, fine-grained, hard and wear-resisting. They are accurately ground to provide a minimum of clearance in the outside tube.

Each outside tube is especially precise in size and selected for straightness. Every tube is individually checked and gauged for accuracy and smooth finish, and is made to much closer tolerances than is the generally accepted practice. These tubes are furnished plain or chromium

FIG. 1

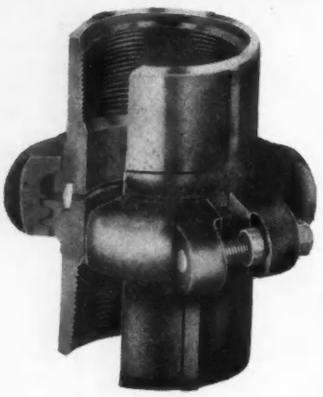
FIG. 2

FIG. 3

plated (B-M-W Non-Kro). The hard chromium plating on the inside surface is non-corrosive and wear-resisting, and definitely adds to pump life.

B-M-W hold-downs other than standard are available. Two types are illus-

Red-Rex
ONE-BOLT
PIPE UNIONS



The new Red-Rex Malleable Union, designed for 500 lbs. working pressure and tested to 1,000 lbs., is the sensation of the quick union field. It is made in both "short hub" and "long hub" types, and is identical in construction throughout to the high pressure steel union. Interchangeable seal rings.

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NOTES FOR THE Equipment Buyer and User

trated. The Lower Extension Hold-down, Figure 2, is recommended when a ball and seat is desired at the lower end of the pump. The closed cage and ball and seat are positioned within the working barrel or seating nipple. With this assembly there is little possibility that the pump will sand up. The B-M-W Tex Type hold-down, Figure 3, is efficient and slightly lower in price than the regular. It may be fitted with the lower extension cage and ball and seat. The B-M-W Admore Insert Pump Anchor can be used for seating the B-M-W Fluid-Lifter Pump at any point in the tubing.

A.S.M.E. Compounds Compressed-Air Machinery Safety Code

American Society of Mechanical Engineers has completed the first safety code for compressed-air machinery and equipment. The code, a nine-page booklet, is designed to cut down the number of accidents resulting from the wide industrial application of compressed-air. To this end it includes specific recommendations for the construction and use of compressors, tanks, and pipe lines, with separate sections on receivers and utilization apparatus. It may be had from either the A.S.M.E. or the American Standards Association, 29 W. 39th Street, New York City, for 30c.

Welding Equipment Catalog

Victor Equipment Company, 844-50 Folsom Street, San Francisco, is now ready to release a new and comprehensively illustrated 32-page welding and cutting apparatus catalog which combines the essential equipments covered in individual and previously issued catalog sections.

L. C. Klein to South America For Oil Country Specialties

L. C. (Lew) Klein, representative of Oil Country Specialties Manufacturing Company, has sailed from New York for Barranquilla, Colombia, on a special business mission. From there he will proceed by plane to the various oil fields in Venezuela and Trinidad, taking about three months for the trop.

Baker Oil Tool President And Wife Convalescing

R. C. Baker, Sr., president of Baker Oil Tools, Incorporated, and Mrs. Baker are convalescing in the Pleasant Valley hospital in Coalinga, California, from injuries and shocks received on the Coalinga-Los Angeles highway when their car encountered an obstruction which threw it off the road and turned it over.

L. D. Armstrong Dies

L. D. Armstrong, secretary-treasurer of Gaso Pump and Burner Manufacturing Company, Tulsa, succumbed to an internal disorder at Rochester, Minnesota, on April 26. He was well known for his business ability and civic activity.

Lane - Wells Company Promotes M. E. Montrose to Sales Manager

M. E. Montrose, formerly Gulf Coast manager of Lane-Wells Company, has been appointed general sales manager with headquarters in Los Angeles.

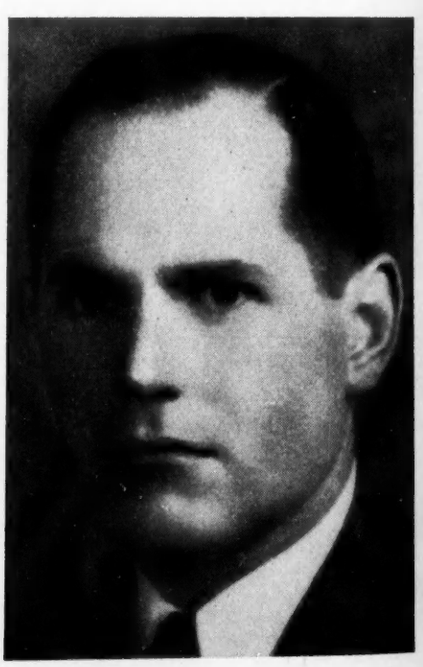
Morton T. Higgs, Gulf Coast sales manager, will replace Montrose as Gulf Coast division manager with headquarters in Houston and will have charge of the company's operations in Texas and Louisiana.

According to Walter T. Wells, president of Lane-Wells Company, D. S. Jeppson has been elected to the board of directors and became controller of the company April 15, 1939. Jeppson has been auditor for the company since 1933 through the firm of D. S. Jeppson, C. P. A. and associates. B. G. Peters, secretary-treasurer of the company since its organization, will continue in that position.

L. H. Gilmer Company Makes Four Sales Appointments

Matthew R. Oberholzer has been promoted to sales manager of L. H. Gilmer Company, Tacony, Philadelphia. He assumes direction of sales for all the company's lines consisting of V-belts, and fabric and rubber-fabric flat belts and belting. During Oberholzer's ten years in the company's sales department, he was for the last six years assistant sales manager, for four of which he headed the fractional-horsepower belts division.

A. K. Schindewolf, from the company's sales staff at Philadelphia, has been appointed district manager for



MATTHEW R. OBERHOLZER
Promoted to sales manager for L. H. Gilmer Company.

NOTES FOR THE Equipment Buyer and User

Louisiana, Mississippi and Arkansas, with headquarters in New Orleans.

In the Chicago territory, in charge of Andrew B. MacFarland, division manager, the following salesmen have been assigned new territories:

O. K. McCullough has been made district manager for Kansas and western Missouri, with Kansas City headquarters.

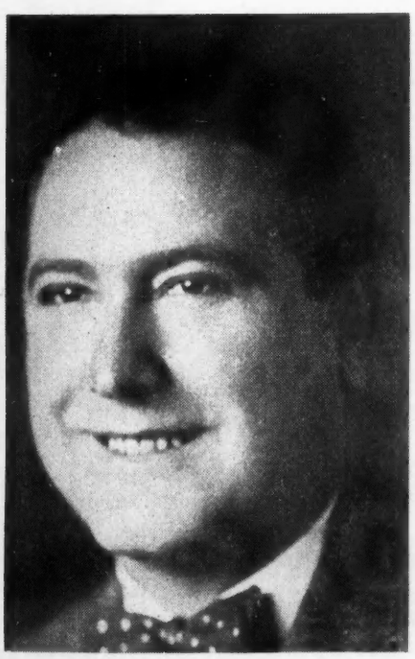
Cliff T. Pilkey takes charge of eastern Missouri and southern Illinois, also as district manager, operating from St. Louis.

The Continental Supply Company Moves Mussler Up and to Dallas

Jack A. Mussler, formerly district manager tubular sales of The Continental Supply Company in Houston, has been appointed manager of tubular sales of the company with headquarters at its general offices in the Continental Building, Dallas, Texas.

Mussler, who began his business career with The Continental Supply Company's parent company, The Youngstown Sheet and Tube Company in 1923, was one of the first graduates of that company's training school. He early specialized in the sale of tubular products, and in 1928 was sent abroad on sales work, which took him to England, France, Burma, India, Iraq, and Egypt. In the following year he traveled extensively in South America in the company's interest.

In 1930 Mussler was placed in charge of The Youngstown Sheet and Tube Company's tubular sales in Oklahoma and Kansas. Two years later he was transferred from Tulsa to Houston where he became district manager of tubular sales. In 1935 he joined The Continental Supply Company in a similar capacity which he has held until his present appointment.



JACK A. MUSSLER
Manager of Tubular Sales, The Continental Supply Company.

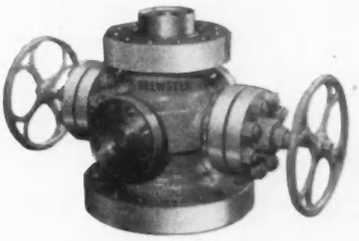
Hydril Company Appoints Whaley Special Sales Representative

Announcement has been made by Hydril Company of Texas of the appointment of C. F. Whaley as special sales representative with headquarters at Houston.

Whaley has had a broad experience in both the drilling and production divisions of the oil industry, having spent a number of years in California, Rocky Mountain areas and throughout the Mid-Continent region. In recent years he has been engaged in the oil field equipment branch of the industry with headquarters in Houston.

C. F. WHALEY
Special Representative for Hydril Company at Houston

BREWSTER By-Pass
TUBING and CONTROL HEAD



Here's something new! Flow from the casing is controlled through two by-pass side outlet valves made into the head. With these valves closed all casing pressure is relieved from the lower wings of the assembly, allowing replacement of gate valves or repairs. Two gate valves are done away with and connections are reduced to a minimum. Write for prices.

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NOTES FOR THE Equipment Buyer and User

A. O. Smith Corporation Now Full-Line Casing Manufacturer

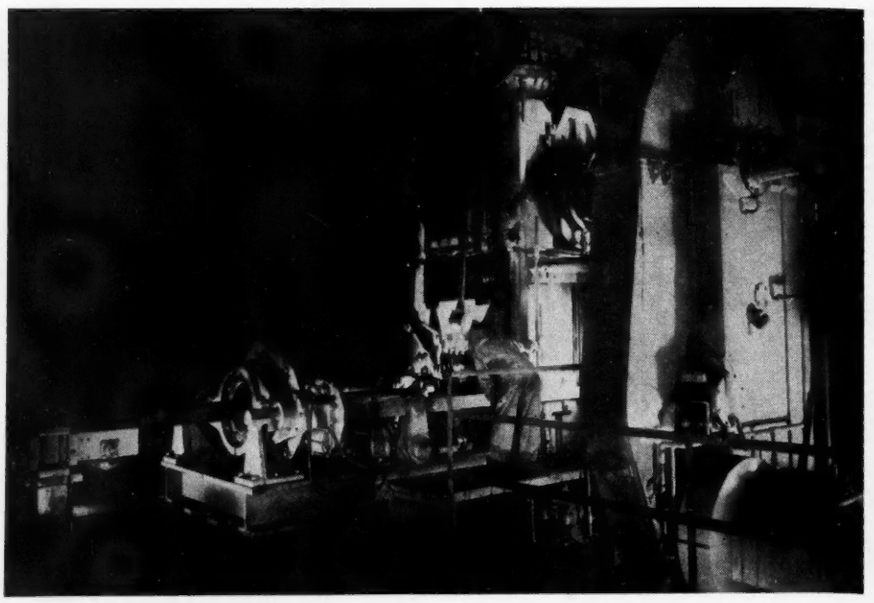
A. O. Smith Corporation, Milwaukee, is now a full-line manufacturer of oil-well casing, with a complete range of A. P. I. standard sizes down to 5½ inches in outside diameter and in wall thicknesses.

Simultaneous with the company announcement comes word that Smith Casing is now available in four grades including a new and still higher yield strength casing, called Super Yield Casing.

With a minimum yield point of 105,000 pounds per square inch, Super Yield Casing is made in the smaller sizes for extremely high collapse pressures. "It is the first standard casing with such high physical strength," according to the company statement, "and it offers new economy with safety, particularly for deeper holes. This newest Smith contribution to the oil industry, marks the latest milestone in casing history. Again, a substantial advance has been made toward the ultimate in setting depths as well as in the efficient utilization of the steel in casing."

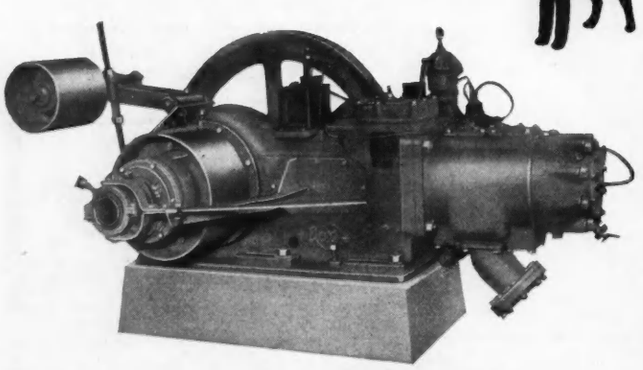
Involving radically new methods of manufacture, the new small sizes, like all Smith Casing, are made from rolled steel plates. This permits thorough examination of the steel before manufacture and assures uniform wall thickness. It is produced in accordance with A. P. I. standards. The new sizes are manufactured in average lengths of 50 feet, this factor considerably shortening the running time for the strings by requiring fewer joints.

A comprehensive book, describing the results of recent Smith studies and tests on casing, is now under preparation and will be ready for distribution in the near future.



Smith High Yield Casing of small diameter is here shown (left foreground) emerging from one of the special machines developed by Smith engineers for this production.

The REID TERRIER



TESTED AND APPROVED

The "Terrier" is built in two sizes, 7½ x 9 inches and 8¼ x 9 inches, as a gas or oil engine, to cover a power range from 11 to 36 H. P. Thoroughly field tested in a variety of different applications, it has earned the approval of both field and office for dependable service and economical operation. May we give you complete information.

Reid

JOSEPH REID GAS ENGINE COMPANY
OIL CITY, PENNSYLVANIA

Squeaks from the Bull Wheel

Dry

"Gosh, Fanny, but I'm thirsty!"
"All right, I'll get you some water."
"I said thirsty, Fanny—not dirty."

No Repairs

"This castle has stood for six hundred years. Not a stone has been touched, nothing altered, nothing replaced."
"Um, they must have the same landlord we have."

Ambitious Maid

"An' may my intended husbin' visit me on Sunday afternoons?"
"Who is your intended?"
"I don't know just yet. I'm a stranger in town!"

Aha!

"Your communism is stupid. If everything were divided today, in a very short time your portion would be gone. What then?"
"Divide again."

Disillusioned

So that rich bachelor didn't propose to you, after all, in spite of all you told him about your abilities in the kitchen?
No; he had to eat several dinners at a restaurant where they advertised "home cooking"; and then he decided to stay single.

So They Are

What colors are your window blinds?
Window blinds are all shades, madam.

Absent-Minded So-and-So

"And you say that last week you were in town where I live?"
"Uh-huh."
"And you thought of me, John?"
"Yep," replied John. "I said to myself, 'Why, I remember—this is where what's-her-name lives!' "

Reverse Flattery

"Do you know, honey, if I had it to do all over again, who I'd marry?"
"No. Who?"
"You."
"Oh, no you wouldn't."

Scientific Reason

Housewife—"But my good man, your story has such a hollow ring."
Hobo—"You're right, Madam, that's the natural result of speaking on an empty stomach."

One Way

Sailor: "Kid me if you like, but I'll bet that ten minutes after we hit port I'll be walking down the street with a beautiful woman on each arm."
Marine: "G'wan! There never was a tattoo artist who could work that fast."

Auction Next?

"Does your wife play contract bridge?"
"Well, judging by what it costs her, I would say she plays toll bridge."

Explanation

"Why do you have BF7652 tattooed on your back?"
"That's not tattooed, doctor. That's where my wife ran into me with the car when I was opening the garage doors."

The Timid Soul

"Is your horse sick?"
"Not that I know of."
"Well, is he balky?"
"No, but he is so darned afraid I'll say 'whoa' and he won't hear me that he stops every once in a while to listen."

Of Course

"My daughter wants a roll of No. 120 camera film."
"Regular or Verichrome?"
"What's the difference?"
"The Verichrome is a much faster film than the regular, but it is five cents higher."
"Give me the regular. My daughter has plenty of time."

Bovine Connoisseurs

A city girl, spending some time in the country, spoke to the farmer about the troubled way in which the cattle regarded her.
"Well," said the farmer, "it must be on account of that red dress you are wearing."
"Dear me. Of course I know it's terribly out of style, but I had no idea a cow would notice it."

Sh-h!

"Now, sir," said the persuasive community chest chairman, "we want you to preside at the big meeting which we are to hold."
"How much?" inquired Mr. Cassius Chex, wearily.
"I don't quite follow you."
"How much is the deficit that you expect my subscription to meet?"

A New A. A. P. G. Book

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By ROBERT M. KLEINPELL

This Work Establishes a Standard Chronologic - Biostratigraphic Section for the Miocene of California and Compares It with the Typical Stratigraphic Sequence of the Tertiary of Europe.

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